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TARGETED EXTENSION OF ENERGY TAX CREDITS

HEARING

BEFORE THE

SUBCOMMITTEE ON
ENERGY AND AGRICULTURAL TAXATION

OF THE

COMMITTEE ON FINANCE
UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

FIRST SESSION

ON

S. 1396

JUNE 17, 1983

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TARGETED EXTENSION OF ENERGY TAX CREDITS

FRIDAY, JUNE 17, 1983

U.S. SENATE,
COMMITTEE ON FINANCE,
SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION,
Washington, D.C.

The committee met, pursuant to notice, at 10 a.m. in room SD-215, Dirksen Senate Office Building, Hon. Malcolm Wallop (chairman) presiding.

Present: Senator Wallop.

[The press release announcing the hearing and a description of S. 1396 by the Joint Committee on Taxation follow:]

[Press release]

FINANCE SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION SETS HEARING ON S. 1396, A TARGETED EXTENSION OF ENERGY TAX CREDITS

Senator Malcolm Wallop, Chairman of the Subcommittee on Energy and Agricultural Taxation of the Senate Committee on Finance, announced today that the Subcommittee will hold a hearing on Friday, June 17, 1983 on S. 1396, Senator Domenici's bill to extend the affirmative commitment period for solar, wind, geothermal, biomass, synthetic fuel, shale oil and chloralkali electrolytic cell equipment. The bill would also expand the energy credits to cover tar sands equipment and oxygen plant equipment associated with a synthetic fuel plant.

In announcing the hearing Senator Wallop also asked for additional comments with respect to the impact of the tax changes enacted as a part of TEFRA last year on the synthetic fuels industry, and what additional measures should be considered by the Committee in providing useful tools for the development of the synfuels technology.

The hearing will begin at 10 a.m. in room SD-215 of the Dirksen Senate Office Building.

DESCRIPTION OF S. 1396 (ENERGY SECURITY TAX INCENTIVES ACT OF 1983)

Scheduled for a Hearing
before the
SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION
of the
COMMITTEE ON FINANCE
on June 17, 1983

Prepared by the Staff
of the
JOINT COMMITTEE ON TAXATION

INTRODUCTION

The Subcommittee on Energy and Agricultural Taxation of the Senate Committee on Finance has scheduled a hearing on June 17, 1983, on S. 1396 ("Energy Security Tax Incentives Act of 1983", introduced by Senators Domenici, Jackson, Wallop, McClure, Byrd, Garn, and Hatch). The bill would modify the affirmative commitment rules for energy tax credits and the definition of energy property eligible for the credit.

The first part is a summary of the bill. This is followed in the second part by a more detailed description of the bill, including present law, explanation of provisions, and the effective date.

I. SUMMARY

In general, the 10-percent business energy investment tax credit expired after 1982 (general 10-percent energy credit). However, the general 10-percent energy credit for certain types of long-term energy projects continues through 1990 if certain affirmative commitments have been made in connection with the projects. Also, certain business energy credits (other than the general 10-percent energy credit), such as the 15-percent credit for solar, wind or geothermal property and the 10-percent credit for biomass property, continue through 1985.

Under S. 1396, the present law affirmative commitment rule applicable to the general 10-percent energy credit would be modified for synthetic fuel production, coal conversion equipment and certain related equipment. Under this modified affirmative commitment rule, the general 10-percent energy credit for this property would be extended through 1992. The present law affirmative commitment rule (as modified by the bill) would be made applicable to chlor-alkali electrolytic cells. In addition, a special affirmative commitment rule would be created for solar, wind, geothermal, and biomass property. If the affirmative commitment requirements imposed by the bill for this property are met, the credits for these types of property would be extended through 1992.

The bill would modify the definition of shale oil equipment and synthetic fuel production equipment, and coal conversion equipment. The bill also would add tar sands property as an item of property eligible for the general 10-percent energy credit and the modified affirmative commitment rule for that credit.

II. DESCRIPTION OF THE BILL

A. Present Law

1. Overview of energy investment tax credits

Prior to 1983, a 10-percent energy investment tax credit was allowed for certain types of energy property (general 10-percent energy credit). The general 10-percent energy credit expired for these types of energy property after 1982, except that this credit applies through 1990 for long-term projects for which certain timely affirmative commitments are made (affirmative commitment rule). Property eligible for the general 10-percent energy credit under the affirmative commitment rule includes alternative energy property, specially defined energy property, recycling equipment, shale oil equipment, equipment for producing natural gas from geopressured brine, and cogeneration equipment.

In addition, a 15-percent energy credit is allowed through 1985 for solar, wind, geothermal, and ocean thermal property. Qualified intercity buses and biomass property are eligible for a 10-percent energy credit. In 1982, a 10-percent credit was added for periods beginning on January 1, 1980, and ending on December 31, 1982, for chlor-alkali electrolytic cells (P.L. 97-424). No affirmative commitment rule applies for these properties. Qualified hydroelectric generating property is eligible for an 11-percent energy credit through 1985. The credit for hydroelectric property is allowed through 1988 under a special affirmative commitment rule.

If energy property also qualifies for the regular investment tax credit, both the regular and energy credits apply. The regular investment credit for any taxable year may not exceed the lesser of the tax liability for the taxable year or $25,000 plus 85 percent of the excess of tax liability over $25,000. The energy credit may be used to offset 100 percent of tax liability after application of the regular credits. Unused credits may be carried back or carried over to other taxable years.

2. Energy credit affirmative commitment rules

General 10-percent energy credit.—Under an affirmative commitment rule, the general 10-percent energy credit (which otherwise expired at the end of 1982) applies through 1990. To qualify, the property must be part of a project with a normal construction period of two or more years. In addition, (1) before 1983, all engineering studies in connection with commencement of construction of the property must have been completed, and all environmental and construction permits required in connection with the commencement of construction must have been applied for, and (2) before 1986, the taxpayer must enter into binding contracts for the acquisition, construction, reconstruction, or erection of equipment specially designed for the project reasonably estimated to cost at least 50 percent of the aggregate cost of all specially designed equipment for the project to be placed in service as part of the project.

Hydroelectric generating equipment.—The 11-percent energy credit for qualified hydroelectric generating equipment (which otherwise expires after 1985) applies through 1988, if an application has been docketed by the Federal Energy Regulatory Commission by January 1, 1986.

3. Shale oil equipment

Shale oil equipment eligible under the affirmative commitment rule for the general 10-percent energy credit generally means equipment for producing or extracting oil from oil-bearing shale rock. Prior to 1981, the credit did not apply to any equipment used for hydrogenation, refining, or other processes subsequent to retorting. However, for periods after 1980, the credit applies to equipment for hydrogenation or other processes applied in the vicinity of the property from which the shale was extracted and applied to bring the shale oil to a grade and quality suitable for transportation to and processing in a refinery (P.L. 97-362).

4. Synthetic fuel production and coal conversion equipment

The definition of alternative energy property eligible for the general 10-percent credit (and the affirmative commitment rule) includes equipment for converting an alternate substance into a synthetic liquid, gaseous, or solid fuel and certain coal conversion equipment. Under Treasury regulations (secs. 1.48-9(c)(5) and (7)), eligible equipment does not include equipment, such as an oxygen plant, that is not directly involved in the treatment of an alternate substance, but produces a substance that is, like the alternate substance, a basic feedstock or catalyst used in the conversion process.

B. Explanation of S. 1396

1. Overview

Under the bill, the energy credit affirmative commitment rules would be expanded and the definition of energy property would be modified for synthetic fuel production and coal conversion equipment. Tar sands property would be added as energy property eligible for the general 10-percent energy credit and the affirmative commitment rule.

2. Energy credit affirmative commitment rules

Solar, wind, geothermal, and biomass energy property.—The bill would add a new affirmative commitment rule for solar, wind, geothermal, and biomass energy property, the energy credits for which otherwise expired under present law at the end of 1985. Under the affirmative commitment rule, which differs significantly from the present law affirmative commitment rule for the general 10-percent energy credit, the energy investment credit would be available for this type of energy property through December 31, 1992.

To qualify for this affirmative commitment rule, on or before January 1, 1986, the taxpayer or any other person must have completed all feasibility studies in connection with the commencement of construction of the project, and must have applied for all environmental and construction permits required in connection with the commencement of construction of the project. This rule would modify the present law affirmative commitment rule by substituting a requirement of completion of feasibility studies for the requirement of completion of engineering studies.

In addition, on or before January 1, 1988, the taxpayer must have entered into binding contracts for the acquisition, construction, reconstruction, or erection of (1) equipment for the project (whether or not specially designed equipment) reasonably estimated to cost 50 percent of the aggregate cost of all equipment to be placed in service as part of the project upon its completion, or (2) equipment specially designed for the project reasonably estimated to cost at least 50 percent of the aggregate cost of all specially designed equipment for the project to be placed in service as part of the project upon its completion. This rule would modify the parallel provision under the present law affirmative commitment rule by adding item (1) above as a means of meeting the requirement.

Unlike the present law affirmative commitment rule, there would be no requirement that the project have a normal construction of two years or more.

Synthetic fuel production and coal conversion equipment.—The bill would modify the present law affirmative commitment rule applicable to the general 10-percent energy credit for synthetic fuel production equipment, coal conversion equipment, and related pollution control or handling equipment by (1) extending the termination date for the credits under the affirmative commitment rule from December 31, 1990 to December 31, 1992, and (2) cubstituting June 30, 1987, for the January 1, 1983, date, relating to completion of engineering studies and application for permits, and (3) substituting December 31, 1988 (or, if later, 18 months after commencement of construction of the project) for the January 1, 1986 date, relating to binding contracts for specially designed equipment.

Chlor-alkali equipment.—The present law affirmative commitment rule applicable to the 10-percent general energy credit (without the modifications described above for synthetic fuel production and coal conversion equipment) would be made applicable under the bill to chlor-alkali electrolytic equipment.

3. Tar sands property

Under the bill, tar sands property would be made eligible for the general 10-percent energy credit and the affirmative commitment rule for that credit. Tar sands property would be defined as equipment necessary and integral to mining, quarrying, or extraction of tar sands, or to the production or extraction of oil from tar sands. Eligible equipment would include equipment used for cracking, coking, hydrogenation, or similar process, but would not include any equipment used for refining.

4. Shale oil equipment

The definition of shale oil equipment, which is eligible for the general 10-percent energy credit, would be amended in two respects. First, mining equipment would be referred to expressly as qualifying equipment. Second, the definition of eligible property would be amended to include equipment for preprocessing shale oil (including property used for hydrogenation, denitrogenation, dearsenation, desulphurization, and deoxygenation) or for similar preprocessing, prior to processing in a conventional refinery instead of referring to hydrogenation or other processes applied in the vicinity of the property from which the shale was extracted and applied to bring the shale oil to a grade and quality suitable for transportation to and processing in a refinery.

5. Synthetic fuel production and coal conversion equipment

The bill would modify the definition of synthetic fuel production equipment and coal conversion equipment, which is eligible for the general 10-percent energy credit, to include equipment, such as an oxygen plant, that, though not directly involved in the treatment of an alternate substance, produces a basic feedstock or catalyst used in such conversion process, and other auxilary equipment.

C. Effective Date

No effective date is contained in the bill. Thus, it is unclear whether the bill is intended to apply to investments made during periods prior to the date of enactment.

Senator WALLOP. This will mark the beginning of a second hearing scheduled for the subcommittee this morning, the subject of which will be the Energy Security Tax Incentives Act of 1983, introduced by my friend and colleague from New Mexico, Senator Domenici.

I was happy to join as an original cosponsor of this legislation which will generally provide for modifications to the present affirmative commitment rules as they apply to synthetic fuel projects as well as including broader definitions for oil shale and coal conversion equipment which would qualify for the energy tax credit.

In addition, tar sands property would be eligible for the energy tax credit, and affirmative commitment rule treatment would be extended to solar, wind geothermal, and biomass properties.

I have long held the belief that we, as a matter of national energy policy, must adopt and implement policies which achieve what must continue to be one of our top national priorities, that of energy self-sufficiency. Whether if is accomplished through energy conservation or the development of alternative energy techologies which seek to exploit the wealth of untapped energy resources that are found within our own borders, or most likely and most preferably a combination of these efforts, they must be actively pursued.

Through a combination of factors, very little progress has been made in providing additional tax incentives for the development of our alternative energy resources. Budget constraints and an administration policy position that energy tax credits are no longer necessary or desirable have threatened the end of energy tax credits and certainly does not bode well for future progress with energy tax credits or other tax incentives directed at developing our abundant alternative energy resource potential.

Nothing has changed since my last dealings with the administration on the topic of energy tax credits to convince me that by some miracle the Treasury Department will testify here today in favor of this legislation. And on the other side of the spectrum, I anticipate that we will hear today that this legislation does not go far enough. Certainly both sides of the issue will be well represented in their views, but it is my sincere hope that this hearing will begin to mold a record that will be necessary for this Congress to pass specific legislation to provide efficient incentives for the development of those energy resources which are at our fingertips which do us absolutely no good if the technology does not exist to exploit them.

This hearing was announced a few weeks ago. I asked for the comments on certain provisions of the Tax Equity and Fiscal Responsibility Act which was passed last year that may have a detrimental impact on the future of synthetic fuel projects. It is my understanding that the basis adjustment required for the investment tax credit and the energy tax credit, the repeal of the increased percentages scheduled for the ACRS depreciation system, and the capitalization of construction period interest and taxes may all contribute to make synfuels projects increasingly difficult to get off the ground.

I will be most interested in the comments of the first panel scheduled to appear before the committee this morning on these provisions and their impact on the future of the synthetic fuel industry.

In conclusion, let me say that I believe there is a case to be made for tax incentives for the continued development of our alternative energy resources. That case must be made by those of you who will be appearing this morning or will be submitting written testimony to the committee.

The case must not only include the importance of developing the various technologies but also that without some incentives those technologies will not be otherwise economically feasible.

Like no other time in our history, this Government must get the biggest bang for its buck within well-defined priorities. It would seem to me that energy self-sufficiency must certainly fit that description, and it is my opinion that we have not seen the last of energy shortages in this country. They seem rather remote at this moment in time, with people buying big automobiles again and a glut in the natural gas market, but those events cannot be viewed as permanent, and they cannot be viewed as continuing Americans' forever blessed right to energy at less than the cost of production.

And so, somehow or another, this country must look in the long-term interests of itself. And surely that long-term interest of itself has sufficient energy to maintain an industrial society. Whatever else we may think, we are not all of us going to be pushing computers. Somebody will in fact have to make the screw that goes into the back of one of them, and that will require energy at some point along the line.

It seems to me that we are not going to be able to do all of the work of the country. In our own homes we will need to be able to get someplace; we will need to be able to get something to us. Transportation and production are all dependent on energy and the health of this country's economy. They are clearly dependent on the ability to predict some future supply, and I think we cannot tolerate self-induced economic crises by failing to recognize that energy is the future as well as the present of this economy.

Our first witness, of course, is my friend Senator Domenici whose bill it is, and I welcome you here this morning, Pete.

STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM THE STATE OF NEW MEXICO

Senator DOMENICI. Thank you very much, Mr. Chairman.

I will be very brief, Mr. Chairman, because actually the proposal which I introduced, which has as cosponsors Senators McClure, Jackson, Johnston, Baker, Byrd, Garn, Hatch, and yourself, I am sure that you are familiar with it, and in addition I have had the privilege of hearing your opening remarks. I can't do it as well as you did. You have about summarized it the way I would.

However, I would state that the bill that we introduced, Mr. Chairman, the Energy Security Tax Incentive Act of 1983, is a very limited bill, and it is very urgent in terms of time.

There are a number of bills that you have to consider in due course that have to do with energy tax credits. And while I support one of the major ones, I believe that the issue before you has much more limited scope and on the other hand is much more critical in terms of time.

What we are talking about, with reference to geothermal, solar, and synthetic fuels, is almost, in my opinion, time-critical, to the extent that if we don't do something to extend the credits and permit the affirmative action that these major programs require, permit them to take place before the operative time runs out, that we literally have a chance of destroying the budding synthetic fuel industry, and certainly we will set back for years if not decades any real geothermal and solar from the standpoint of major use as contrasted with residential and the like.

So I would just ask, Mr. Chairman, that my statement be made a part of the record, suggest to you and the members of the committee that there is an interesting forum taking place right now in this area. I am hopeful that they will have a report and that your committee will avail itself of them.

The 1983 Renewable Energy Forum is meeting in the area. A number of us are cosponsors, and Robert Anderson of Atlantic Richfield has assembled about 35 to 40 of our country's leaders from the corporate side, from the utility and financial institution side, and many other policymakers, and they are addressing this issue. While it may be broader than this tax bill we are speaking of, I am sure that they will objectively furnish information as to what is needed if the renewables are going to take a real foothold in this country.

In addition, I think you are absolutely right when you mentioned that these are not times when we can easily pass even tax measures that sound good unless we are careful to understand how much it is costing the Treasury, and get as much—to paraphrase you—"bang for the buck."

The best that I can find out through my staff, the legislation that we have sponsored, Mr. Chairman, over a period of from now through 1988 costs about $1.2 billion. The estimates are, however, that in the early years it could be as low as $50 million a year.

I think we have to make this kind of commitment. I agree with you wholeheartedly. If we are going to be lulled into thinking we have got an energy situation that is good for America's future because we happen to have a world glut in oil and a glut here in America in natural gas, and we have stabilized the prices as the result of the glut to the detriment of any major risk taking in renewables, if we think that is a nice balanced situation and it will all end up in good shape in the next few decades, I think we are absolutely wrong.

In the area of synthetic fuels, as you well know, we either get some pilot projects going where our great talent for building those facilities is actually utilized and our industrial base understands the infrastructure requirements, and we put some people to work in them, and we do it quickly, we will be a long time catching up with countries that are well on the way. Those who have done it, obviously, and done it well, have accomplished it because they literally had no alternative. When you compare South Africa with us, obviously they want to be self-sufficient and all they have is coal, they have done some dramatic things. But this is not the kind of thing where we can just say, "Well, since they have done it, we will do it some day." We have to do it. We have to get on with it, as I see it.

So I urge expeditious treatment. I thank you for not only cosponsoring the legislation but for setting the hearings and getting on with making a record so that some action can be taken.

Thank you very much, Mr. Chairman.

Senator **Wallop**. Pete, thank you very much. I think you would agree with me that in the face of another energy shortage, even if we knew how, these things could not come online in the morning.

Senator **Domenici**. Absolutely.

Senator **Wallop**. And not knowing how, we would simply be sentencing the American people to a period of real deprivation. We may not find the way out of the next energy shortage quite so quickly as the last one, when all the world's economy began to crumble at the same time and this artificial surplus existed.

Senator **Domenici**. I agree wholeheartedly, and I also would say to you, Mr. Chairman, I can remember vividly serving on the committee with at least half the jurisdiction when the previous crisis occured. And I can remember serving a couple of months on the conference when we tried to put together a major bill in terms of so-called energy security for the country and energy independence.

I assure you that a careful analysis without the crisis, such as you are doing now, and taking some prudent action when the crisis isn't there, is going to end up unequivocally saving the American taxpayers a lot of money; because what is going to happen, just as sure as we are here, if the event you have described occurs is that we will be in such a frantic frame of mind that we will throw money at everything, and we won't understand how we can't cause one of these to mushroom into existence, and we will do everything possible to get it done. And we will probably do it wrong. But with certainty we will do it at a much higher cost than an orderly approach such as extending these tax credits for these particular types of facilities which we know we are going to spend some money on some day.

Senator **Wallop**. Pete, thank you very much. I appreciate your coming by this morning.

Senator **Domenici**. Thank you.

[The prepared statement of Senator Pete V. Domenici follows:]

STATEMENT BY PETE V. DOMENICI

Good morning, Mr. Chairman. I would like to thank you for the opportunity to testify before your Subcommittee on the Energy Security Tax Incentives Act of 1983. I would also like to thank you for your leadership through the years in matters concerning energy tax credits. As all of us know, who have been supportive in this area, your leadership has been most valuable.

Mr. Chairman, I would like to briefly review the situation with regard to existing energy tax credits and give you a brief statement of my rationale for the support of the legislation we are discussing today. Existing energy tax credits for solar, wind, geothermal, and biomass renewable energy resources will expire on December 31, 1985. Energy tax credits for certain synthetic fuels properties expired on December 31, 1982. There is, however, an affirmative commitment provision which applies to this type of energy property and provides that the energy tax credit will remain available until 1990.

The legislation which I and Senators Jackson, McClure, Johnston, Baker, Byrd, Garn, Hatch and yourself introduced would provide an affirmative commitment provision for the renewable energy resources, as well as extend the affirmative commitment period for synthetic fuels.

The rationale for my support of the extension of certain commitment dates to the existing affirmative commitment provision and for providing an affirmative commitment provision for renewable energies is straightforward. Project sponsors, whether attempting to construct a solar thermal power tower, a geothermal powerplant, or a wind farm need assurance now that if they diligently proceed with the project development and if for whatever reason they are unable to complete construction and begin operation of the facility by the end of the calendar year 1985, the energy tax credit will be available for some longer period of time.

Mr. Chairman, this is not the only proposal before you which relates to energy tax credits. There are some which would be somewhat broader in their application. I support those efforts but, I am concerned that the length of time necessary to convince our colleagues of the benefits that would come from such legislation would be detrimental to projects presently underway. Unless we can demonstrate quickly our willingness to continue to support energy tax credits a number of valuable solar, biomass, and synthetic projects may fail to materialize. The proposal we have before us today is an interim emergency measure which is needed so that project sponsors have the assurance they need to proceed. Expedient action will send these developers of our abundant domestic energy resources a clear and unambigous signal that Congress still encourages the marketplace to develop these resources; the Congress recognizes the need for additional time for those projects which have been delayed by a lengthy time of economic uncertainty and drastically fluctuating world energy supply and demand: and the Congress remains committed to the early development of solar, wind, geothermal, biomass, and coal, oil shale, and tar sands resources.

Mr. Chairman, I know that you believe, as I do, that our Nation is not free from the dangers of energy dependence. Unfortunately, our efforts to fully develop our domestic energy potential have slowed and a failure on the part of the Congress to renew its commitment to energy independence and the use of a diversity of resources at this time would be tragic.

Mr. Chairman, I would like to draw the Committee's attention to a unique meeting taking place right now a short distance outside of Washington, which underscores the importance of the subject of this hearing. It underscores the concern of the Business community in this area. The 1983 Renewable Energy Forum, of which I am one of several Congressional co-sponsors and which is chaired by Robert Anderson, Chairman of Atlantic Richfield, has assembled thirty-five leaders of major corporations, utilities, financial institutions, and other key policy makers. They are discussing, for two days, issues that are at the heart of what we are addressing—what are the key factors for bringing the emerging energy technologies into full commercial status? What is necessary to mobilize capital for these technologies on the private market? They will be looking at the effect of tax policies as well as other matters. I am sure that the results of the discussions of this prestigious group would be of great value to the Committee. I would urge, therefore, that the hearing record be left open to receive at least a preliminary report from the Renewable Energy Institute on its 1983 Forum. Also, I believe Senators McClure and Garn may wish to submit testimony.

Again, I thank the Chairman for his hospitality for finding an opportunity for me to testify.

Senator WALLOP. I have a statement from Senator Byrd which he wishes to have entered into the record as well in advance of this.

[The prepared statement of Senator Robert C. Byrd follows:]

STATEMENT OF SENATOR ROBERT C. BYRD

Mr. Chairman, I address my remarks to S. 1396, the "Energy Security Tax Incentives Act of 1983." I am pleased to be a co-sponsor of that legislation which was introduced by Senator Domenici on May 26, 1983. I note that the distinguished chairman of the Energy and Agricultural Taxation Subcommittee is also a co-sponsor of this important bill.

S. 1396 amends the Internal Revenue Code to extend the period for qualifying certain types of property for the energy tax credit. The bill covers synthetic fuels projects; solar, geothermal, wind, and biomass projects; tar sands projects; production equipment for shale oil and synthetic fuels, including equipment to produce feedstocks or catalysts for such projects; and, electric energy conservation projects associated with chlor-alkali electrolytic cell conversions.

The Senate acted favorably on the provisions of this legislation at the end of the 97th Congress, in the form of amendments to the Surface Transportation Assistance Act. Unfortunately, the House conferees on that legislation did not have time to adequately address these provisions, and the conference report did not include the energy tax credit provisions.

The enactment of S. 1396 is a vital element of our national energy policy. It will provide assurance to the planners of synthetic fuels and renewable energy projects that Congress continues to support the strengthening and diversification of our national energy resources.

The credits are necessary because the energy projects involved are often utilizing new technology or new industrial processes. The risk associated with these projects is accordingly higher than normal, and the calculations of return on equity that are made by project sponsors and their financial advisers must include the higher risk factors.

It is clear that the United States must push forward with projects that bolster our energy self-sufficiency, and the extension of the energy tax credits to the classes of projects affected by S. 1396 is an appropriate means to that end.

Section 7 of the bill is a technical amendment that affects chlor-alkali cell conversion projects. The Senate adopted my amendment on this subject during the 97th Congress, and the House conferees accepted a portion of the amendment during consideration of the Surface Transportation Assistance Act. Section 7 restores the remainder of my amendment by making certain that the "affirmative commitment rule" applies to chlor-alkali cell conversions.

This is particularly important for a modification project in Natrium, West Virginia. Over $11 million was expended on this project by the end of 1982. The conversion will create 200 jobs in the state over the next several years, which is critical in West Virginia as the current unemployment rate is approximately 20 percent—highest in the nation.

S. 1396, by extending the affirmative commitment rule to various classes of energy projects, will fill a gap in our national energy policy and will help stimulate employment. The bill will help make it possible for project sponsors to continue making investments in the private sector that are essential to developing synthetic fuels, renewable energy sources, and advanced energy conservation techniques.

I urge the subcommittee to support the enactment of this legislation.

Senator WALLOP. And now, the Treasury's dismal view of this, with Mr. Greg Ballentine.

STATEMENT OF HON. J. GREGORY BALLENTINE, DEPUTY ASSISTANT SECRETARY, TAX ANALYSIS, DEPARTMENT OF THE TREASURY, WASHINGTON, D.C.

Mr. BALLENTINE. Thank you, Mr. Chairman.

I am pleased to have the opportunity to discuss with you S. 1396. This bill would extend the period during which expenditures on various items of equipment can be qualified for energy tax credits, and the period in which these credits can be claimed. Further, the bill would add items of equipment to those currently qualifying for energy tax credits.

The Treasury Department does oppose enactment of S. 1396.

Under present law, solar, wind, or geothermal property qualifies for a 15-percent energy investment tax credit. In addition, biomass property qualifies for a 10-percent energy investment tax credit. Solar, wind, and geothermal property as well as biomass property generally also qualify for the regular 10-percent investment tax credit. The energy credits available to these categories of property terminate under current law on December 31, 1985.

In general, the 10-percent energy investment tax credits on most other types of energy property expired on December 31, 1982, except for expenditures that qualified under the affirmative commitment rule.

Under the affirmative commitment rule, such property which is part of a project with a normal construction period of 2 years or more qualifies for an energy credit up until December 31, 1990, if before 1983 all engineering studies in connection with the construction of the project have been completed and all environmental and construction permits have been applied for, and if before January 31, 1986, the taxpayer has entered into a binding contract for the acquisition, construction, or erection of equipment for the project which represents at least 50 percent of the estimated cost of the project.

There is also available under current law a production credit for alternative fuels produced from nonconventional sources.

The bill makes the following amendments to current law:

First, a new affirmative commitment rule is made applicable to solar, wind, or geothermal property and to biomass property. Thus, credit for expenditures on such property will not expire in all cases on December 31, 1985.

Second, the definition of property eligible for a 10-percent energy investment tax credit is amended to include tar-sands equipment and expenditures on tar-sands equipment are made available for the affirmative commitment rules.

Third, the definition of shale oil equipment contained in present law is amended to include certain other equipment, which is also then made available for the affirmative commitment rules.

Fourth, the definition of synthetic fuels production equipment contained in present law is amended to include certain other equipment, and those expenditures are eligible for the affirmative commitment rules.

Fifth, the definition of equipment for the production of synthetic fuel or feedstock from coal is amended to include certain other equipment, and it is made available for the affirmative commitment rules.

Sixth, the affirmative commitment provision of present law is amended to extend the phaseout period applicable to the energy property, as newly defined above, to December 31, 1992, in lieu of December 31, 1990, substituting June 30, 1987, for the January 1, 1983, date by which all engineering studies must be completed, and substituting December 31, 1988, for the January 31, 1986 date by which a binding contract for 50 percent of the project must be adopted.

A separate affirmative commitment rule applies to solar, wind, geothermal, and biomass properties.

Finally, expenditures on chloralkali electrolytic cells are made eligible for the current law affirmative commitment rule.

The change in the affirmative rules in effect extends the availability of the energy credits to some expenditures that would not have otherwise qualified. In addition, credits for certain equipment that do not now qualify for the affirmative commitment rules would be made eligible for the proposed expanded affirmative commitment provisions.

Finally, equipment that was never eligible for energy investment tax credits, including some equipment indirectly involved in the production of synthetic fuels, will become eligible. Indeed, under the expanded definition, virtually the entire operation of some synthetic fuel plants, from mining to refining, may be subsidized by energy tax credits.

I will comment first on our general reason for opposing such an expansion and then turn to just one specific additional issue that I want to mention.

Tax incentives for specific investments are contrary to this administration's general philosophy of relying on the free operation of markets to allocate resources efficiently and with the policy of relying on the marketplace rather than Federal intervention to determine patterns of energy use and production.

If business investment is to be encouraged, and certainly that has been a primary goal of this administration, then it should be encouraged through broad-based tax reduction. This in fact is what was accomplished by the Economic Recovery Tax Act when it reduced marginal tax rates across the board and introduced the ACRS system.

ACRS has removed general tax impediments to business investment, including investments now eligible for energy tax incentives. Compared to prior law, ACRS substantially reduces taxation of the return to equipment designed to produce alternative fuels.

At a 10-percent discount rate and for a corporation in the 46-percent tax bracket, the present value of tax savings from depreciation deductions and the regular investment credit on 5-year equipment is about 46 cents per dollar of investment—the equivalent of the tax savings under expensing. The energy tax credits make the present value of tax savings per dollar of investment considerably more generous than expensing—about 54 cents per dollar for property eligible for a 10-percent energy credit, and 58 cents for property eligible for 15-percent energy credit. It should be noted that tax-exempt financing and other subsidies are also available for some investments that receive energy credits.

These specific energy incentives are different from ACRS in that they apply only to certain activities. Their effect is not so much to achieve a tax reduction as to introduce a tax differential among activities. Thus, energy-tax incentives distort the allocation of resources, encouraging firms to undertake investments that are uneconomic at current and expected future market prices. They encourage users to purchase fuels that have a higher economic cost than alternative fuels, because the tax system lowers the cost of a subsidized fuel. As a result, these incentives divert workers, capital, and initiative from more productive uses elsewhere in the economy and lower the new productivity of our Nation's capital stock.

In 1978, at the time the energy tax incentives were enacted, price controls and supply allocations were in effect on both crude oil and natural gas, and there was substantial resistance to decontrol.

Because of price controls, business firms had insufficient incentive to invest in alternative energy sources. Therefore, in the absence of free-market prices, an economic rationale existed for energy tax incentives. However, since the enactment of the energy credits, crude oil prices have been decontrolled and natural gas prices are being decontrolled and are approaching, and in some cases exceeding, free-market levels. As a result, the tax credits are no longer needed.

One final point different from the general issue: S. 1396 would add chloralkali electrolytic cells to the class of property eligible for the affirmative commitment rule. Chloralkali electrolytic cells are used in the manufacture of chlorine gas, hydrogen gas, and caustic soda by the electrolysis of brine. The equipment plays no part in the production of synthetic fuels. Consequently, the addition of this equipment to the list of specifically defined energy property in the Surface Transportation Act last year was unjustified as a matter of energy conservation. Moreover, most of the property that was made eligible for the energy investment credit in the act had already been placed in service. Consequently, the availability of the energy credit did not serve as an incentive to build such property.

According to our estimates, the extension of the energy credit to chloralkali electrolytic cells in the Surface Transportation Act resulted in a revenue loss of $3 million. Making such property eligible for the affirmative commitment rules, as in this bill, would reduce tax receipts by an additional $10 million for fiscal years 1983 through 1985. Such an extension would generally be made available for property that is already under construction or for which commitments had been made. Rather than extend the availability of energy credits to such property, Congress should repeal the present law provision adopted last year.

The revenue effect of S. 1396 as a whole depends upon projections of oil prices. Based on current projections of energy prices for the next 5 years, the projected revenue loss for the period fiscal years 1983–88 is $1.2 billion. If by mid-decade projected oil prices for the end of the decade increase to the DOE midrange projections of 1 year ago, before the recent fall in energy prices, the revenue loss of the next decade is expected to be $2.8 billion.

In conclusion, S. 1396 extends special tax incentives that are no longer justified and should be allowed to terminate. Such an extension is unwarranted on the grounds of tax policy, and energy policy, and represents an inappropriate expansion of the rule of Government in private-investment decisions.

That concludes my summary of the statement. If it is appropriate, I will submit the entire statement for the record, Mr. Chairman.

Senator WALLOP. It is of course appropriate, and I appreciate that, Mr. Ballentine.

[The prepared statement of J. Gregory Ballentine follows:]

For Release Upon Delivery
Expected at 10:00 A.M. E.D.T.
Friday, June 17, 1983

STATEMENT OF
J. GREGORY BALLENTINE
DEPUTY ASSISTANT SECRETARY (TAX ANALYSIS)
DEPARTMENT OF THE TREASURY
BEFORE THE SUBCOMMITTEE
ON ENERGY AND AGRICULTURAL TAXATION
OF THE SENATE COMMITTEE ON FINANCE

Mr. Chairman and Members of the Subcommittee:

I am pleased to have the opportunity to discuss with you S. 1396. This bill would extend the period during which expenditures on various items of equipment can be qualified for energy tax credits and the period during which these credits can be claimed. Further, the bill would add items of equipment to those currently qualifying for energy tax credits.

The Treasury Department strongly opposes enactment of S. 1396.

CURRENT LAW

Energy Investment Tax Credits

Under present law, solar, wind or geothermal property qualifies for a 15 percent energy investment tax credit. In addition, biomass property qualifies for a 10 percent energy investment tax credit. Biomass generally includes animal waste, wood, sewage, sludge, oceanic and terrestial crops, and municipal and industrial waste. Biomass property is generally defined as equipment used to burn biomass as well as equipment used to convert biomass into a synthetic solid fuel. Equipment used to convert biomass into alcohol fuel also constitutes biomass property, but only where the primary source of energy for this equipment is neither oil, natural gas nor one of their byproducts.

Solar, wind and geothermal property, as well as biomass property, generally also qualify for the regular 10 percent investment tax credit. The energy credits available to these categories of property terminate on December 31, 1985.

In general, the 10 percent energy investment tax credits on most other types of energy property expired on December 31, 1982 except for expenditures that qualified under the "affirmative commitment" rule. These included credits for equipment to produce synthetic fuel from alternate substances and coal conversion equipment and related equipment. In general, under the affirmative commitment rules, such property which is a part of a project with a normal construction period of two years or more qualifies for an energy credit up to December 31, 1990 if (i) before January 1, 1983, all engineering studies in connection with construction of the project have been completed and all environmental and construction permits have been applied for, and (ii) before January 1, 1986, the taxpayer has entered into binding contracts for the acquisition, construction or erection of equipment for the project which represents at least 50 percent of the estimated cost of the project.

Energy Production Credits

There is also available under current law an energy production credit for alternative fuel produced from non-conventional sources. The available credit is as much as

$3 for each quantity of fuel equivalent to a barrel of oil in BTU terms. The credit applies to the following forms of energy production:

- Oil produced from shale and tar sands,
- Gas produced from geopressured brine, coal seams, biomass, Devonian shale or a tight formation,
- Liquid, gaseous or solid synthetic fuels or feedstocks produced from coal (including lignite),
- Fuel from qualifying processed wood, and
- Steam produced from solid agricultural byproducts.

In general, the production credit is allowed for qualifying energy that is sold after December 31, 1979 and before January 1, 2001 and that is derived from facilities placed in service after September 30, 1979 and January 1, 1990. The credit generally phases out as the average wellhead price for domestic crude oil rises from $23.50 to $29.50 per barrel in 1979 dollars. The $3 credit and the $23.50 to $29.50 phaseout range are adjusted for inflation. In 1983 dollars these phaseout amounts are projected to be $31.42 and $39.44. The $3 value of the credit will be approximately $4 in 1983. Because of recent decreases in the price of oil, the credit for all alternative fuels, other than gas from Devonian shale, is currently available to taxpayers.

The production credit attributable to production from any particular facility is reduced proportionately by any subsidized energy financing, Federal, State and local grants and proceeds from industrial development bonds that are used to construct or acquire the facility or its equipment. The credit is also reduced, dollar-for-dollar, for any energy investment tax credit available with respect to property used in the project.

SUMMARY OF S. 1396

The bill makes the following amendments to current law:

1. A new affirmative commitment rule is made applicable to solar, wind or geothermal property and to biomass property.

2. The definition of property eligible for a 10 percent energy investment tax credit is amended to include tar sands equipment. Such equipment did not previously qualify for an energy tax credit. Tar sands equipment includes equipment

necessary and integral to the "mining, quarrying or extraction of tar sands or the production or extraction of oil from tar sands including equipment used for cracking, coking, hydrogenation, or similar processes but not including equipment used for refining." Further, expenditures on tar sands equipment are made eligible for the affirmative commitment rules.

3. The definition of shale oil equipment contained in present law is amended to include equipment used for the mining of shale rock and "preprocessing" equipment for hydrogenation, denitrogenation, dearsenation, desulphurization, deoxygenation and "similar preprocessing prior to processing in a conventional refinery." Expenditures on shale oil equipment are eligible for a 10 percent energy investment credit and are eligible for the affirmative commitment rules.

4. The definition of synthetic fuel production equipment contained in present law is amended to include equipment such as an oxygen plant that, though not directly involved in the treatment of an alternate substance, produces a basic feedstock or catalyst used in such conversion process as well as "other ancillary equipment." Expenditures on synthetic fuel production equipment are eligible for a 10 percent energy investment credit and are eligible for the affirmative commitment rules.

5. The definition of equipment for the production of synthetic fuel or feedstock from coal (including lignite) contained in present law is amended to include equipment such as an oxygen plant producing a basic feedstock or catalyst used in the coal conversion process and other ancillary equipment. Expenditures on this Class of equipment are also eligible for a 10 percent energy credit and the affirmative commitment rules.

6. The affirmative commitment provision of present law is amended to extend the phase out period applicable to the energy property, as newly-defined above, to December 31, 1992 (in lieu of December 31, 1990), substituting June 30, 1987 for the January 1, 1983 date by which all engineering studies must be completed, and substituting December 31, 1988 for the January 1, 1986 date by which binding contracts for 50 percent of the project must be adopted.

7. Finally, expenditures on chlor-alkali electrolytic cells are made eligible for the current law affirmative commitment rule.

TREASURY COMMENTS

General Objections to the Proposal

The change in the affirmative commitment rules in effect extends the availability of the energy credits to some expenditures that would not have otherwise qualified. In addition, credits for certain equipment that do not now qualify for the affirmative commitment rules would be made eligible for the proposed expanded affirmative commitment provision. Finally, equipment that was never eligible for energy investment tax credits, including some equipment indirectly involved in the production of synthetic fuels, will become eligible. Indeed, under the expanded definition, virtually the entire operation of some synthetic fuels plants, from mining to refining, may be subsidized by energy tax credits.

I will comment first on our general reasons for opposing such an expansion and then turn to one specific additional issue concerning this bill.

Tax incentives for specific investments are contrary to this Administration's general philosophy of relying on the free operation of markets to allocate resources efficiently and with the policy of relying on the market place rather than Federal intervention to determine patterns of energy use and production. If business investment is to be encouraged -- and certainly that has been a primary goal of this Administration -- then it should be encouraged through broad-based tax reduction. This, in fact, is what was accomplished by the Economic Recovery Tax Act when it reduced marginal tax rates across the board and introduced the Accelerated Cost Recovery System ("ACRS"). The ACRS has removed general tax impediments to business investment, including investments now eligible for energy tax incentives. Compared to prior law, ACRS substantially reduces taxation of the return to equipment designed to produce alternative fuels.

At a 10 percent discount rate and for a corporation in the 46 percent tax bracket, the present value of tax savings from depreciation deductions and the regular investment credit on five year equipment is about 46 cents per dollar of investment - - the equivalent of the tax savings under expensing. The energy tax credits make the present value of tax saving per dollar of investment considerably more generous than expensing -- 54.1 cents per dollar for property eligible for a 10 percent energy credit and 58.2 cents per dollar for property eligible for a 15 percent energy credit. It should be noted that tax-exempt financing and other subsidies are also available for some investments that receive energy credits.

These specific energy incentives are different from ACRS in that they apply only to certain activities. Their effect is not so much to achieve a tax reduction as to introduce a tax differential among activities. Thus, energy tax incentives distort the allocation of resources, encouraging firms to undertake investments that are uneconomic at current and expected future market prices. They encourage users to purchase fuels that have a higher economic cost than alternative fuels because the tax system lowers the cost of the subsidized fuel. As a result, these incentives divert workers, capital, and initiative from more productive uses elsewhere in the economy and lower the net productivity of our nation's capital stock.

In 1978, at the time the energy tax incentives were enacted, price controls and supply allocations were in effect on both crude oil and natural gas and there was substantial resistance to decontrol. Because of price controls, business firms had insufficient incentive to invest in alternative energy sources. Therefore, in the absence of free market prices, an economic rationale existed for energy tax incentives. However, since the enactment of the energy credits, crude oil prices have been decontrolled and natural gas prices are being decontrolled and are approaching, and in some cases exceeding, free market levels. As a result, the tax credits, whatever their original justification, are no longer needed.

S. 1396 also dilutes a principal purpose of the sunset provisions of the 1978 Energy Tax Act (already diluted by the adoption of the affirmative committment rules in 1980) which was to encourage taxpayers to invest in alternative energy property and synthetic fuels property within a narrow time frame.

Chlor-Alkali Electrolytic Cells

Finally, S. 1396 would add chlor-alkali electrolytic cells to the class of property eligible for the affirmative commitment rule. Chlor-alkali electrolytic cells are used in the manufacture of chlorine gas, hydrogen gas and caustic soda by the electrolysis of brine. The equipment plays no part in the production of synthetic fuels. Consequently, the addition of this equipment to the list of specially defined energy property in the Surface Transportation Act last year was unjustified as a matter of energy conservation. Moreover, most of the property that was made eligible for the energy investment credit in that Act had allready been placed in service. Consequently, the availability of the energy credit did not serve as an incentive to build such property.

According to our estimates, the extension of the energy credit to chlor-alkali electrolytic cells in the Surface Transportation Act resulted in a revenue loss of $3 million.

Making such property eligible for the affirmative commitment rules would reduce tax receipts by an additional $10 million for fiscal years 1983-1985. Such an extension would generally be made available for property that is allready under construction or for which commitments have been made. Rather than extend the availability of energy credits to such property, Congress should repeal the present law provision adopted last year.

Revenue Loss will be Substantial

The revenue effect of S. 1396 depends upon projections of oil prices. Based on current projections of energy prices for the next 5 years the projected revenue loss for the period FY 1983-1988 is $1.2 billion. If by mid-decade projected oil prices for the end of the decade increase to the DOE mid-range projections of a year ago, the revenue loss over the next decade is expected to be $2.8 billion.

CONCLUSION

S. 1396 extends special tax incentives that are no longer justified and should be allowed to terminate. Such an extension is unwarranted on grounds of tax policy and energy policy and represents an inappropriate expansion of the role of government in private investment decisions.

Senator **Wallop**. Mr. Ballentine, in your summary, I can understand Treasury's position from a standpoint of tax policy, where you say that tax incentives for specific investments are contrary to the administration's general philosophy of relying on the free operation of markets to allocate resources, and I can understand that as a general philosophical statement; but I cannot understand that as a statement of energy policy. And it seems as though the administration is going down the road with real blinders on, not having used any of the advantages of hindsight when it comes to this country's energy future.

These are not the kinds of investments that can be made on a projection of today's energy prices. And then it seems that once in a while Government has the obligation in their interests of its people to look over the horizon just once and see what it may be that will be in their interests. That's what Government's purpose is.

I have no quarrel with the free market operations and other things leading to today's kinds of present investments. I have a real quarrel when we can see from the standpoint of history and the standpoint of logic that we are going to reenter and a problem that we have just suffered so devastatingly in the effects of the energy crisis, the two energy crises, of the seventies on this world's economy let along our Nation's.

So there comes a time when Government has to have some vision. If the administration says that in their view the vision of the future contains no synthetic fuels, they should say so, but not make this kind of an argument.

Mr. **Ballentine**. In my statement I don't want to understate the complexity of just the issues you have raised, and they are very difficult issues.

I think the administration agrees that in the past there were disruptions but places the blame for those disruptions not on the absence of provisions such as this but on the kind of price controls that existed at that time. And it does feel, though recognizing that it is a very complex and difficult issue, that in spite of the uncertainties that surround the future in this area, that the marketplace can deal with those uncertainties.

It is not so much that we see no future for synthetic fuels but that we see no need for us to accelerate that future, that as time passes and as oil prices rise in real terms, as they are generally expected to do, synthetic fuels will become more and more profitable at unsubsidized prices, and that that is the process to rely on.

But I do recognize that that is a difficult issue.

Senator **Wallop**. Well, if you will, I think it is a very self-indulgent kind of policy. The statement made that you have that it would divert workers, capital, and initiative for more productive uses would simply say that what we need this morning should be available to us without consequence, and the hell with tomorrow.

I realize I am not speaking directly for you, but as a matter of policy in the world of energy, that has to be a view based on both historical perspective and a logical prospective.

Energy prices will rise, as you suggest, primarily due to critical shortages, and the more critical those are, the more drastically they will rise and the more economic chaos they will create.

If there is a matter of vision that is an obligation of government, it seems to me that that is it. It is what can you do, even at some sacrifice today, to prevent such major sacrifice tomorrow because of shortsightedness?

That is all I am suggesting, is that I can understand if from a tax policy, and I can understand it from the purists view of a free market; but energy has not operated, as you pointed out, in the free market. And we are not going to get out of the effects of nearly four decades of regulation by wishing it away.

In your statement you suggested we will soon have decontrolled natural gas prices. I don't know that you have been sitting in on the Energy Committee's hearings, but I would not bet that we will soon have it. We may have it some day.

But I really would hope that the administration would not let its free market principles so destroy its obligation as a visionary government. I support the administration and have supported it and will continue to support it, but there are some things that it is the obligation of the Government to do, and it's called leadership, not followership.

We have too damned many of us sitting around looking at the polls and seeing where the public is. And when the public looks for its leader, it finds it under its tail behind it. And somehow or another people do have to take some visionary steps—in the interest of conservatism.

Now, this may not be the one. We can argue whether this is the one or another one is, but I don't know anything more fundamental to the economic future and the security future of this country than adequate supplies of energy under most foreseeable consequences of acts at home and abroad. And that's where I think I would like to see us go as an administration, which I support on so many issues.

I appreciate your appearing here this morning.

Mr. **Ballentine**. Thank you, Mr. Chairman.

Senator **Wallop**. Now we have three panels coming and 16 witnesses. Everyone's statements will be included in the record in their entirety, but we will use the time clock in order to see to it that those who have come from a long distance have the same opportunity to testify as those who have come from just downtown.

The first panel consists of Mr. Ed Miller, the vice president for finance of the U.S. Synfuels Corporation; Mr. Michael Koleda, president, National Council on Synthetic Fuels Production; Mr. R. Glenn Vawter, vice president of TOSCO Corp., who is accompanied by Mr. Robert Harding; Mr. Lyman Spencer of the Gulf Oil Corp., Denver, on behalf of RMOGA Tar Sands Committee; Mr. William Hudson, chairman and chief executive officer of GNC Energy Corp., Dallas, Tex., on behalf of Mountain West Associates; Mr. Joseph M. Schell, vice president, Kidder, Peabody & Co. of New York.

Mr. Miller, would you please proceed?

STATEMENT OF ED MILLER, VICE PRESIDENT FOR FINANCE, U.S. SYNTHETIC FUELS CORPORATION, WASHINGTON, D.C.

Mr. **Miller**. Good morning, Mr. Chairman.

My comments will be limited to those sections relevant to our activity—namely, synthetic fuels from coal, oil shale, and tar sands.

As plants are unlikely to be built without our assistance, under present economic conditions, the calculations may be taken to represent the entire synfuels industry.

In the past few years Congress provided two kinds of incentives for synfuels. First came the energy investment tax credit and the production tax credit. Next came the SFC, to provide direct loan and price supports.

The two forms of assistance worked quite well together. The ETC plus the regular ITC provides up-front cashflow that encourages capital formation. The SCF assistance is for a longer term, with price guarantees for 10 years of operations, and loan guarantees that may extend 15 or even 25 years.

While Congress correctly perceived the need of both stimuli, it did not accurately gage the difficulty in mobilizing private capital. Due to the weak economy, reduced cashflows, and the sharp reduction in long-run oil price expectations, corporate sponsors are reassessing their plans, and some have withdrawn their projects.

The development of synfuels was further discouraged by TEFRA in 1982, which reduced capital formation benefits.

The SFC can provide loan guarantees for 75 percent of an investor's cost, but he must provide the remaining 25 percent as equity capital. A $2 billion project requires at least $500 million of equity. The ETC provides a cash benefit that makes the funding of this equity more manageable and improves rate of return by increasing leverage.

Unlike the other incentives, Congress put a short time fuse on the ETC. Expenditures through 1990 may qualify, but only if in 1982 a sponsor completed his engineering studies and permitting requirements. By 1985 he must have contracts for half of his specially designed equipment.

These affirmative commitment dates are proving to be unrealistic. Because of the energy slump, not many sponsors were willing to advanced synfuel projects on a fast track. Relatively few have been able to organize their syndicates and get their permits.

Of the 15 coal and oil shale projects now pending before SFC, we think that only about 6 met last year's deadline. We calculate that the grandfathered projects may get 40 percent of our total assistance. The proposed bill would make the ETC available to projects getting the other 60 percent by extending the 1982 cut-off date by 4½ years and providing more time and flexibility for the second date.

The bill enchances the ETC in two important ways. First, it includes tar sands projects. Although this resource is smaller than coal or oil shale, we find that tar sands projects are more numerous and can be in operation faster, with a lower cost-per-barrel of assistance. They will help the SFC achieve its production goals.

The bill also allows coal and oil shale projects the full ETC for off-stream facilities like oxygen plants, which are now excluded. As it stands, the ETC is effectively a 6-percent investment tax credit because of the exclusions. Broadening the coverage under this bill would raise it to an effective 9 to 10 percent.

Sometimes we are asked if the ETC limitations cause the cancellation of projects. The answer is, "no," not directly, but in a broader sense limiting these credits does hinder development of synfuels. In negotiations we offer supports that will yield a rate of return appropriate to the risk. If the project isn't eligible for the ETC, it necessarily requires more of our support.

We calculate the trade-off at about 3.7 to 1; that is, it takes almost $4 of additional SFC aid to compensate for $1 of lost ETC.

Let me explain this. The ETC is a bottom-line benefit realized in the first years of a project. In contrast, a guaranteed loan has to be repaid with interest, and thus has a lower net present value. As for price supports, they are paid after startup and are taxed as ordinary income, so their net present value is also low.

The proposed bill which might create about $1.1 billion of ETC's for synfuels, is equivalent to adding $4 billion the SFC's obligational authority of about $15 billion. This would permit us to increase the number of large projects financed from, say, 10 projects to 13. As there are 20 important synfuels technologies excluding tar sands, the bill would permit us to broaden the portfolio of technologies that will be built at commercial scale.

The initial revenue loss will be about $1.1 billion over the next 5 or 6 years assuming the SFC is successful in it mission. Some or all of this may be recouped by the Treasury in the late eighties and early nineties as an offset to the production tax credit if oil prices remain low. More importantly, assuming the bill permits us to finance three additional plants, the Treasury may expect to collect about $13 billion in income taxes over their lives. There will be additional large revenues generated by taxes on wages, suppliers' profits, and so forth.

As synfuel plants will back out imported energy rather than domestic production, these may be considered net gains to the Treasury and not merely shifts among domestic producers, as alleged by the Treasury today.

In closing, it is clear the Nation needs to employ its entire arsenal of incentives if we are to launch a synthetic fuels industry in this decade. As envisioned by the Congress, the Tax Code and the SFC were to provide a balanced set of incentives. S. 1396 will restore the balance and allow synfuels development to go forward in a responsible, market-oriented manner.

Senator WALLOP. Thank you, Mr. Miller.

[The prepared statement of Edward S. Miller follows:]

TESTIMONY BEFORE SENATE FINANCE SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION

by Edward S. Miller,
Vice President for Finance
United States Synthetic Fuels Corporation
June 17, 1983

The Synthetic Fuels Corporation is pleased to offer its views on bill S. 1396 to extend and enhance the energy investment tax credit (ETC). My comments will be limited to those sections relevant to projects the SFC is authorized to support, namely investment in plants to produce synthetic fuels from solid resources--coal, oil shale and tar sands. As it is unlikely under current economic conditions that the private sector will build synfuels plants without assistance, our calculations may be taken to represent the entire industry.

A few years ago Congress provided two kinds of government incentives for synthetic fuels. First came the ETC, in 1978, and the production tax credit as part of the Windfall Profit Tax Act of April 1980. The second incentive was direct loan and price support assistance to projects, to be provided by the SFC, which was authorized by the Energy Security Act on June 30, 1980.

It is clear that Congress intended to offer the fledgling synfuels industry the dual incentives. The two forms work together quite well. The ETC (along with the regular investment tax credit) helps the synfuel sponsor by providing an up-front cash flow that encourages capital formation. In contrast, SFC's assistance is for a longer term--our price guarantees underwrite up to 10 years of operations while our loan guarantees may extend for 15 to 25 years. The operative assumption is that after the price support period, the project will be competitive over the rest of its life of roughly 30 years.

While Congress correctly perceived the need of a combination of stimuli, it did not accurately gauge the difficulties that would be encountered in mobilizing capital for the new industry. The fundamental problem has been the weak economic environment prevailing since about 1980, and in particular the likelihood in the '80s of stable to declining energy prices. Two years ago the median of published forecasts for crude oil was $60 per barrel in 1990 and $80 for 2000, both adjusted to constant 1983 dollars. Such projections are now at about $35 and $52 respectively. These lowered projections, and the weak cash flows of many companies, are causing corporate sponsors to reassess their plans, and some have withdrawn their projects. The development of synfuels was further discouraged by TEFRA in 1982, which reduced capital formation benefits such as expensing of interest during construction and reduction of depreciable basis by 50% of ITC and ETC taken.

The ETC improves the return to an investor in a synfuels plant by increasing his leverage. The SFC can guarantee loans for up to 75% of the cost of a project but the remaining 25% must be provided as private sector equity capital. This 25% is a large amount; in a $2 billion project, the equity need is $500 million. (About $2.9 billion of private sector equity has been committed to projects now before us.) The ETC, by providing an immediate cash benefit to sponsors, greatly assists in capital formation and makes the funding of projects more viable.

Although the SFC is authorized to make awards through 1992 and the production tax credit will be available through the end of the century, Congress put a fairly short time fuse on the ETC. It is true that expenditures through 1990 may qualify for the credit, but only when a sponsor completed by the end of 1982 his engineering studies and permitting requirements. In addition, the synfuel sponsor must have contracts for half of his specially designed equipment by the end of 1985.

These two "affirmative commitment" dates are proving to be unrealistic. Because of the energy market downturn, not many sponsors were willing to spend the large sums needed to advance synfuels projects on a fast track. Relatively few have been able to organize their syndicates and get their permits. Of the 15 coal and oil shale projects now pending before the SFC, we estimate that only about 6 met last year's-deadline and are "grandfathered" for the ETC. As we expect new projects to subscribe to future SFC solicitations, the grandfathered projects will probably account for about 40% of our total assistance awards. The proposed bill would solve the problem for the other 60% by extending the first affirmative commitment date by 4-1/2 years and providing additional time and flexibility for the second date.

The bill enhances the effectiveness of the ETC in two important ways. First, it includes tar sands outlays as eligible expenditures. Although the U.S. tar sands resource is smaller than either coal or oil shale, we are finding that tar sands projects are more numerous and can be in operation more quickly than other types, and at a lower cost-per-barrel of assistance. These will help SFC achieve its production goals.

The bill also allows investors in coal and shale projects the full ETC on so-called off-stream facilities, like oxygen plants, which are now excluded from qualified expenditures. We calculate that for synfuel projects, the ETC today is the equivalent of about a 6% investment tax credit because of the exclusions. Allowing the credit on off-stream items would raise the ETC to a more effective 9% to 10%. The incremental tax benefit to sponsors would be about 50¢ per barrel over the life of the project.

We are sometimes asked if the limitation of the ETC is causing the cancellation of any projects. The answer is "no," not directly, but in a broader sense limiting these credits does hinder private sector development of synfuels. In negotiations we bargain toward price supports set to yield a rate of return that appears to be appropriate to the risk involved. If the project isn't eligible for the ETC, it necessarily requires a greater amount of support.

We have calculated the tradeoff between the ETC and the amount of aid the SFC must give in its absence. We estimate the multiplier at about 3.7 to 1; that is, it takes almost $4 of additional SFC aid to compensate for $1 of lost ETC. Let me explain. A dollar of ETC is a net bottom-line benefit to the sponsor realized in the first years of a project. In contrast, a dollar of loan guaranteed by SFC has to be repaid in the future, with interest, and thus has a lower net present value. As for price supports, they will be paid over a period of future years and will be taxed as ordinary income, so their net present value is also low. Assuming that at the margin our additional assistance is a combination of both forms, we calculated the 3.7 to 1 ratio. The proposed bill, which might create an additional $1.1 billion of ETCs for synfuels, is the equivalent of adding $4 billion to SFC's present obligational authority of about $15 billion. This would permit us to increase the number of large projects financed from say 10 to 13. As there are about 20 important synfuels technologies, excluding tar sands, the bill would permit us to broaden the portfolio of technologies that will be built at commercial scale.

Let me comment on revenue loss and gain from the bill, as we see it. The initial revenue loss, over the next 5 or 6 years, assuming SFC is successful in its mission, may be about $1.1 billion. It is possible that some or all of this may be "recouped" by the Treasury in the late eighties and early nineties as an offset to the production tax credit. This will happen if oil prices remain low in real terms. More importantly, assuming the bill permits us to finance three additional plants and that such plants are like those now before us, the Treasury may expect to collect about $13 billion in income taxes over their lives. These figures are based on our long range price forecasts. There will be additional large revenues generated by taxes on wages, suppliers' profits, and so forth. As synfuel plants will back out imported energy rather than domestic production, these may be considered net gains to the Treasury.

In closing, it has become clear that the nation needs to employ its entire arsenal of incentives if we are to launch a synthetic fuels industry in this decade. As envisioned by Congress several years ago, the tax code and the SFC were to provide a balanced set of incentives. S.1396 will restore the balance and allow synthetic fuels development to go forward in a responsible, market-oriented manner in the synfuels program.

STATEMENT OF MICHAEL S. KOLEDA, PRESIDENT, NATIONAL COUNCIL ON SYNTHETIC FUELS PRODUCTION, WASHINGTON, D.C.

Mr. KOLEDA. Mr. Chairman, you have my statement. I will summarize it briefly here.

Senator WALLOP. Thank you.

Mr. KOLEDA. First, we support S. 1396. We commend Senator Domenici for introducing it, and you, Mr. Chairman, for being a cosponsor.

Mr. Chairman, we believe that the synthetic fuels effort must continue. The reasons are the facts of life as we see them:

The U.S. energy resource base is very heavily skewed toward solid fuels, principally coal, shale, and to an important but lesser extent, tar sands.

Our domestic oil and gas reserves are holding steady at best, and that's despite a tremendous upsurge in drilling activity immediately following oil price decontrol a couple of years ago.

The Middle East continues to supply one-third of the free world's oil supplies. We know from experience that the Middle East is a troubled and unstable area.

The current soft oil market will not, as you point out, continue forever. If past experience is any kind of guide, we will alternate in the future between shortage and glut, between crisis and complacency.

It is important that the United States be in a position to manage the transition that will inevitably take place toward a greater reliance on solid fossil fuels. The free market—and I think your remarks were exceptionally well taken—the free market will not necessarily provide for a smooth transition.

If the increase in oil prices that will accompany declining reserves worldwide were to occur smoothly and steadily, the market would anticipate that, the long-term investments would be made, and the transition would be orderly. We cannot expect that kind of predictable future; we haven't had it in the past, we are unlikely to have it in the future. We will have fits and starts, leaving industry woefully uncertain about when the next runup in real prices is likely to occur in response to events beyond the control of our free market economy and our country. In such a climate of uncertainty major corporations are reluctant to make heavy capital commitments without some support. That's where Government comes in. That is the rationale for a limited public role in long-term energy development.

These are terribly difficult times for synthetic fuels investment. Declining real oil prices and record high real interest rates are the main culprits.

I was interested to hear Mr. Ballentine from the Treasury mention that projects not undertaken would employ people in productive jobs elsewhere. I don't know where those productive jobs are at the moment, but I do know we've got the technical and managerial resources at the moment to go ahead on synthetic fuels projects. Engineers, incidentially, are being laid off in droves from the companies that are capable of building these plants and have the know-how.

Tax changes in the past year have hurt synthetic fuels development. Our estimates are that TEFRA and failure to extend the affirmative commitment deadlines under the ETC, together, have cut the rate of return on equity in a synfuels project by as much as 30 percent.

S. 1396 is a limited bill, but it is an important bill, and it provides timely relief. We estimate that S. 1396 would restore approximately half the rate of return on equity from loss of TEFRA and the failure to extend the affirmative commitment deadlines.

As for net Treasury gains or losses, our estimates—and I expect that they will be supported by the other witnesses here as well—show that in all cases the Treasury is a net gainer from this stimulus legislation.

Our calculations show that the net gains to the Treasury are anywhere from 2½ times to 10 times the revenue losses from this bill, and that's on a present value basis, taking into account that the revenue gains will likely be more toward the future, whereas the revenue losses would be in the short run.

But I don't want to make simply a narrow accounting argument. What we are talking about is sound long-range energy policy in a strategic area; we are talking about looking ahead in an area where Government has to take the long view.

Reliance on the private market, the free market, is a very important concept. Free markets send important signals on conservation, and energy use, and also on energy production. But in important respects the free market in oil ends where the water begins. We are in a world oil market. Events are too often influenced by geopolitics, fundamental religious movements, and cartel strategy. They are not within the control of our economic ideology in this country. It is important to keep that in mind, and in this respect your comments earlier were well received.

Thank you very much.

Senator WALLOP. Thank you, Mr. Koleda.

[The prepared statement of Michael S. Koleda follows:]

TESTIMONY

OF

MICHAEL S. KOLEDA
PRESIDENT
NATIONAL COUNCIL ON SYNTHETIC FUELS PRODUCTION

Mr. Chairman, members of the Subcommitee, my name is Michael Koleda. I am President of the National Council on Synthetic Fuels Production -- the trade association of the synthetic fuels industry. Our member companies are involved in the principal synthetic fuels projects under consideration in the United States today.

Mr. Chairman, the synthetic fuels industry strongly supports S. 1396 -- the "Energy Security Tax Incentives Act of 1983." We appreciate your co-sponsorship of this legislation as well as your sponsorship last year of a similar bill -- S. 750. And we are grateful to Senator Domenici for his sponsorship of S. 1396 and for his efforts on behalf of the EITC late last year.

Our specific industry interests are in the provisions of the bill that would (a) extend the affirmative commitment deadlines for synthetic fuels, (b) clarify the intention of the Congress with respect to qualifying property, and (c) extend coverage of the energy tax credit to include tar sands property.

The Energy Security Tax Incentives Act of 1983 is an important bill for several reasons.

America's vast deposits of oil shale and coal will become important sources of petroleum supplements and substitutes through the end of this century and into the next.

Passage of S. 1396 signals a consistency in federal tax policy toward these long-term resource base development projects. Such consistency is of great importance if industry is to build the long lead time, large scale, technically challenging synthetic fuels projects whose justification is tied to the long-term energy requirements of the economy and to national security.

S. 1396 also improves the basic economics of synthetic fuels projects thereby contributing to the prospects that the private sector -- within the confines of its own decision-making framework -- can bring into commercial use the technologies to transform coal, oil shale, tar sand, heavy oil and biomass into clean-burning petroleum supplement and petroleum substitute fuels.

Synthetic fuels development offers the United States a potential new avenue of industrial success. These projects extend our energy horizons while providing productive jobs and long-term tax revenues well into the next century. Our country, its people and elected leaders possess the necessary manpower skills, natural resources and vision to make this happen.

Passage of S. 1396 would send a timely message to the energy industry in the United States and to our oil import dependent allies abroad that the United States has not once again been mesmerized by the apparent surpluses in the world oil markets and that we are not retreating from our national responsibilities to ensure energy availability for a growing economy in the decades ahead.

Mr. Chairman, the plain facts are that the U. S. energy resource base is heavily skewed toward solid fossil fuels -- principally coal and oil shale. Domestic oil and gas reserves are barely holding steady despite an enormous increase in drilling activity in the past couple of years. The United States will make the transition to greater reliance on clean-burning fuels from solid resources because of the reality of our reserve situation. Whether this transition is made deliberately as a matter of choice or achieved frantically as a matter of necessity is up to us. National policy to assist the development of a U. S. synthetic fuels production capability -- through the Synthetic Fuels Corporation and through incentives in the tax code -- allows the U. S. to determine how this transition to greater reliance on solid fossil fuels is to proceed. Failure to sustain the synfuels incentives in the face of current economic and market conditions is to relinquish control of the timetable for synthetic fuels development in the U. S. to world politics and the interests of cartel-minded oil exporting nations.

However, despite this clear need to assemble and demonstrate commercial technologies that will turn these largely untapped solid energy resources into readily usable liquids and gases, synthetic fuels development in the United States has slowed dramatically in the past few years. The reasons are understandable, if lamentable.

Commercial synthetic fuels projects are large-scale efforts requiring billions of dollars of capital investment.

The projects require long lead times -- 5 to 7 years in the construction phase alone -- that delay capital recovery of the billions of investment dollars.

The projects require the construction and operation of mining, materials handling, retorting and upgrading technologies at a much larger scale than have previously been demonstrated.

And the profitability of the projects -- the basic element to attract capital in a market economy -- depends on continued increases in real oil prices through the remainder of the century.

Four years ago, Mr. Chairman, the unforeseen Iranian revolution cut world oil production by approximately 5 percent. Yet, world oil prices on the spot market doubled in a single year. Real oil prices were widely expected to increase steadily through the end of the century. In that climate, the private sector naturally focused its attention on the benefits of synthetic fuels production projects over the longer term.

At the same time, the government was developing a synthetic fuels policy to encourage nearer term production to provide for the energy requirements of the civilian and military sectors and protect the integrity of the underlying economy from price manipulation or supply embargoes by oil-exporting nations. In 1979, government and industry were each pursuing synfuels for different reasons that reflected their own responsibilities.

The current energy market is unsettled and the future is uncertain. However, we are all hoping for and have seen the early signs of a gradual economic upturn. Published articles on the future of energy prices now seem to agree that gradually tightening markets and a slow resumption of real oil price increases will accompany the economic recovery. But tightening world oil markets and the continuing political instability of the Middle East are the unfortunate "facts of life" in the world's energy supply picture. The troubled Middle East still contains nearly two-thirds of the world's proved oil reserves and produces almost one-third of the free world's oil. Although we are making significant strides in energy conservation and in stockpiling short-term strategic reserves of oil, we should as a national policy be encouraging the development of this country's vast and diverse synthetic fuels resource bases for the long-term.

In today's uncertain energy markets, consistent and predictable government policies are required to encourage companies to proceed with development of replicable, commercial synthetic fuels facilities.

In this connection it is important to recognize that changes in federal tax treatment in the last year have lowered rates of return on synthetic fuels projects. I am referring here to the passage last August of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) and the expiration on December 31, 1982 of the Energy Investment Tax Credit (ETC) for companies unable to meet the affirmative commitment deadline.

The combined impact of TEFRA and the failure to extend the ETC affirmative commitment deadlines has lowered by as much as 8 percent the anticipated rate of return on investment on synthetic fuels projects and has lowered by as much as 30 percent the rate of return on equity.

Mr. Chairman, as I have pointed out in my testimony, the market incentives to develop synthetic fuels projects have eroded sharply since 1981. The tax treatment changes of the past nine months have further reduced the rate of return on synthetic fuels projects and have eroded confidence in government's commitment to the synthetic fuels component of our long term energy strategy.

We strongly urge, therefore, that the affirmative commitment deadlines be extended as proposed in S. 1396. We also urge that all synthetic fuels resource bases receive equal tax treatment as is provided in those sections dealing with tar sands equipment, oil shale equipment and alternative energy property. This will contribute to the economic strength of projects struggling to get on their feet by partially restoring the tax incentives that existed less than a year ago.

S. 1396 would go far toward assuring the energy industry that the Congress can take the long view in forging predictable and stable tax policy to encourage private investment in synthetic fuels projects.

Thank you, Mr. Chairman, for your support of S. 1396. I will be pleased to try to answer any questions that you may have.

STATEMENT OF R. GLENN VAWTER, VICE PRESIDENT OF TOSCO CORP., DENVER, COLO.

Mr. VAWTER. Mr. Chairman, I am Glenn Vawter, senior vice president of TOSCO Corp.; however, today I am here in my capacity as chairman of the RMOGA Committee on Oil Shale in Denver. I am accompanied by Robert Harding of the law firm of Groom & Nordberg.

We very much appreciate the opportunity to be able to discuss tax incentives for the development of shale oil. As you well know, shale oil is one of the Nation's truly greatest untapped natural energy resources, with resources that are at least double that of the Middle East. However, falling oil prices, rising interest rates, the general recession, and, frankly, on-again-off-again signals from Washington have all helped to delay or even caused suspension of many shale oil projects.

But over and above the present industry problems, the long-term energy problems of this country are still there, and history has proven the danger of being lulled into a false sense of security by the current bubbles and declining energy prices that we are now experiencing.

With this in mind, Mr. Chairman, we would like to make several points with regard to tax incentives for shale oil. First, the RMOGA Committee on Oil Shale supports S. 1396 as introduced. The extension of the affirmative commitment date for synthetic fuel projects that expired at the end of last year, and the clarification of the definition of oil shale equipment, as embodied in S. 1396, are our primary tax priorities.

Second, the RMOGA Committee on Oil Shale continues to support legislation introduced in the last Congress by Senators Wallop and Armstrong, the so-called Energy Community Self-Help Act. This legislation would allow taxpayers to deduct energy-impact-assistance expenditures that are made in various communities where synthetic fuel plants are being located in order to alleviate the socioeconomic impact of the projects on those communities.

And finally, as others have said, we would comment on the tax treatment for synthetic fuel plants under ERTA and, most recently, TEFRA. The former as enacted would have been beneficial to the economics of capital-intensive projects such as shale oil development; however, last year TEFRA reversed that and actually increased the economic costs of developing large-scale projects. These changes by TEFRA, coupled with the expiration of the energy credits, have taken away considerable incentives and have further made the economics of developing shale oil mush less attractive.

In summary, then, the RMOGA Committee on Oil Shale has adopted a tax position supporting provisions of S. 1396 as introduced. Passage would provide one, at least, clear signal that the Congress would give to the oil shale industry that would be meaningful and would not appreciably affect current budgets or tax revenues.

Thank you for this opportunity. We would be happy to answer questions later.

Senator WALLOP. Thank you, Mr. Vawter.

[The prepared statement of R. Glenn Vawter follows:]

STATEMENT OF

R. GLENN VAWTER

REPRESENTING

ROCKY MOUNTAIN OIL AND GAS ASSOCIATION COMMITTEE ON OIL SHALE

BEFORE THE

SENATE FINANCE SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION

ON

S. 1396

JUNE 17, 1983

MR. CHAIRMAN, I AM GLENN VAWTER, SENIOR VICE PRESIDENT OF TOSCO CORPORATION. I AM HERE TODAY IN MY CAPACITY AS CHAIRMAN OF THE ROCKY MOUNTAIN OIL AND GAS ASSOCIATION (RMOGA) COMMITTEE ON OIL SHALE. I AM ACCOMPANIED BY ROBERT HARDING OF THE LAW FIRM OF GROOM AND NORDBERG.

MR. CHAIRMAN, RMOGA CONSISTS OF SOME 750 MEMBER COMPANIES INVOLVED IN ENERGY PRODUCTION. THE COMMITTEE ON OIL SHALE IS MADE UP OF 26 COMPANIES WHO REPRESENT THE FULL SPECTRUM OF THOSE INVOLVED IN THE DEVELOPMENT OF OIL SHALE. WE APPRECIATE THE OPPORTUNITY TO APPEAR TODAY AND DISCUSS TAX INCENTIVES

FOR THE DEVELOPMENT OF SHALE OIL - TRULY ONE OF OUR NATION'S GREATEST UNTAPPED NATURAL ENERGY RESOURCES.

THE MEMBERS OF THE SUBCOMMITTEE HAVE HEARD TESTIMONY IN THE PAST ON THE TREMENDOUS POTENTIAL OF SHALE OIL. WE NEED NOT DISCUSS THAT POTENTIAL HERE AGAIN TODAY, UNLESS YOU HAVE SPECIFIC QUESTIONS. WE DO WANT TO POINT OUT, HOWEVER, THAT THERE ARE ABOUT 2 TRILLION BARRELS OF SHALE OIL IN THE GROUND IN THIS COUNTRY, WITH ABOUT 600 BILLION BARRELS CONSIDERED RECOVERABLE WITH PRESENT TECHNOLOGY. THAT MEANS THAT THE UNITED STATES SHALE OIL RECOVERABLE RESERVE IS ABOUT TWICE THE KNOWN RESERVES OF THE MIDDLE EAST. IN ADDITION, SHALE OIL IS ONE OF THE FEW ALTERNATIVE FUELS THAT HAVE THE CHARACTERISTICS OF CONVENTIONAL OIL AND GAS AND CAN BE USED IN THEIR PLACE. ENERGY EXPERTS, BOTH INSIDE AND OUTSIDE OF THE GOVERNMENT, SUPPORT THE DEVELOPMENT OF THIS RESOURCE AND MANY BELIEVE IT IS ONE OF THE FEW ALTERNATIVE FUELS THAT CAN MAKE A MAJOR CONTRIBUTION TO OUR DOMESTIC ENERGY SUPPLIES BY THE END OF THIS CENTURY.

WHILE THE RECORD IS WELL DOCUMENTED ON THE POTENTIAL OF SHALE OIL, THE DEVELOPMENT HAS BEEN DIFFICULT ESPECIALLY IN RECENT YEARS. FALLING OIL PRICES, RISING INTEREST RATES, THE GENERAL RECESSION, AND FRANKLY, "ON AGAIN, OFF AGAIN" SIGNALS FROM WASHINGTON HAVE ALL HELPED TO PUT OIL SHALE PROJECTS IN THE BACKGROUND. INDEED, THE BIGGEST STORIES ON OIL SHALE IN THE PAST FEW MONTHS HAVE BEEN THE DELAYING OR CLOSING OF

PROJECTS. IN SPITE OF THOSE ACTIONS, THERE ARE INDICATIONS THAT A COMMERCIAL SHALE INDUSTRY WILL YET BECOME A REALITY. IN A RECENT SOLICITATION BY THE U.S. SYNTHETIC FUELS CORPORATION THE LARGEST NUMBER OF PROJECTS SUBMITTED WERE FOR OIL SHALE. BUT OVER AND ABOVE THE PRESENT INDUSTRY PROBLEMS, THE LONG-TERM ENERGY PROBLEMS OF THIS COUNTRY ARE STILL THERE, AND HISTORY HAS PROVEN THE DANGER OF BEING LULLED INTO A FALSE SENSE OF SECURITY BY ENERGY SUPPLY "BUBBLES" AND DECLINING ENERGY PRICES. WE COMMEND THE SUBCOMMITTEE FOR CONTINUING TO SHOW AN INTEREST IN THE ENERGY FUTURE OF THIS COUNTRY. WE BELIEVE SHALE OIL CAN MAKE A SIGNIFICANT CONTRIBUTION TO THAT FUTURE. WITH THIS IN MIND, MR. CHAIRMAN, WE WOULD LIKE TO MAKE SEVERAL POINTS WITH REGARD TO THE TAX INCENTIVES FOR SHALE OIL PROJECTS.

FIRST, THE RMOGA COMMITTEE ON OIL SHALE SUPPORTS S. 1396 AS INTRODUCED. THE EXTENSION OF THE AFFIRMATIVE COMMITMENT DATE FOR SYNTHETIC FUEL PROJECTS THAT EXPIRED AT THE END OF LAST YEAR, AND THE CLARIFICATION OF THE DEFINITION OF "OIL SHALE EQUIPMENT" AS EMBODIED IN S. 1396 ARE OUR FIRST TAX PRIORITIES. WITH THE CURRENT CONGRESSIONAL BUDGETARY RESTRAINTS, A SIMPLE EXTENSION OF THESE AFFIRMATIVE COMMITMENT DATES AND THE DEFINITION CLARIFICATION WOULD NOT APPEAR TO HAVE A SIGNIFICANT IMPACT ON THE BUDGET, BUT WOULD INDEED GIVE THOSE OF US TRYING TO DEVELOP THESE LONG-TERM PROJECTS SOME ECONOMIC INCENTIVE AND, JUST AS IMPORTANT, A CLEAR SIGNAL THAT THE

CONGRESS SUPPORTS THE CONTINUATION OF THESE PROJECTS. MOREOVER, THE EXTENSION WOULD APPEAR TO BE IN KEEPING WITH THE COMMITTEE'S ORIGINAL INTENT THAT COMMITMENT DATES WERE SET IN ORDER TO KEEP PROJECTS MOVING FORWARD AND THAT THE EXTENSION OF SUCH DATES WAS TO BE CONSIDERED AT A LATER TIME.

SECONDLY, THE RMOGA COMMITTEE ON OIL SHALE CONTINUES TO SUPPORT LEGISLATION INTRODUCED IN THE LAST CONGRESS BY SENATORS WALLOP AND ARMSTRONG, THE SO CALLED "ENERGY COMMUNITY SELF-HELP ACT." THIS LEGISLATION WOULD ALLOW TAXPAYERS TO DEDUCT "ENERGY IMPACT ASSISTANCE EXPENDITURES" THAT ARE MADE IN VARIOUS COMMUNITIES WHERE SYNFUEL PLANTS ARE BEING LOCATED IN ORDER TO ALLEVIATE THE SOCIOECONOMIC IMPACT OF THE PROJECTS ON THE COMMUNITIES. IN ADDITION, THE BILL WOULD ALLOW FOR THE DEDUCTION AT THE FEDERAL LEVEL OF THE PREPAYMENT OF STATE OR LOCAL TAXES WHERE THE TAXES WOULD BE OF BENEFIT TO THE AREAS IMPACTED BY THE DEVELOPMENT. WHILE THAT LEGISLATION IS NOT THE DIRECT SUBJECT OF THESE HEARINGS, WE BELIEVE THE PROVISIONS OF THAT BILL ARE CONSISTENT WITH GOALS TO HELP DEVELOP SYNFUEL PROJECTS IN SUCH A WAY AS TO HAVE THE MOST BENEFICIAL RESULTS FOR THE AREAS IMPACTED BY DEVELOPMENT AND TO DO SO IN A WAY CONSISTENT WITH SOUND TAX POLICY AND BUDGET RESTRAINTS.

FINALLY, WE WOULD COMMENT ON THE TAX TREATMENT FOR SYNTHETIC FUEL PLANTS UNDER ERTA AND MOST RECENTLY, TEFRA. IN 1981, THE ECONOMIC RECOVERY TAX ACT (ERTA) ESTABLISHED DEPRE-

CIATION UNDER THE ACCELERATED COST RECOVERY SYSTEM (ACRS) WHICH PROVIDED FOR 150% DECLINING BALANCE DEPRECIATION FOR EQUIPMENT PLACED IN SERVICE IN 1981 THROUGH 1984, 175% DECLINING BALANCE FOR EQUIPMENT PLACED IN SERVICE IN 1985, AND DOUBLE-DECLINING BALANCE FOR EQUIPMENT PLACED IN SERVICE IN 1986 AND SUBSEQUENT YEARS. THE ACRS, AS ENACTED AT THAT TIME, WOULD HAVE BEEN BENEFICIAL FOR THE ECONOMICS OF CAPITAL-INTENSIVE PROJECTS SUCH AS OIL SHALE DEVELOPMENT.

HOWEVER, LAST YEAR THE TAX EQUITY AND FISCAL RESPONSIBILITY ACT (TEFRA) INCREASED THE ECONOMIC COSTS OF DEVELOPING LARGE SCALE PROJECTS BY (1) REPEALING THE ACCELERATION OF DEPRECIATION TO 175% DECLINING BALANCE IN 1985 AND TO 200% DECLINING BALANCE IN 1986; (2) REDUCING THE BASIS FOR DEPRECIATION BY 50% OF THE AMOUNT OF REGULAR INVESTMENT AND ENERGY TAX CREDITS; AND (3) AMORTIZING INTEREST AND PROPERTY TAXES DURING CONSTRUCTION OVER A 10 YEAR PERIOD INSTEAD OF BEING DEDUCTED CURRENTLY AS PREVIOUSLY ALLOWED. THESE CHANGES BY TEFRA, COUPLED WITH THE EXPIRATION OF THE ENERGY CREDITS, HAVE TAKEN AWAY CONSIDERABLE INCENTIVES AND HAVE FURTHER MADE THE ECONOMICS OF DEVELOPING SHALE OIL UNATTRACTIVE. THESE DISINCENTIVES COME AT A TIME WHEN THE GOVERNMENT IS TRYING TO ENCOURAGE MORE SPENDING IN ORDER TO HELP THE ECONOMY. AS YOU KNOW, THE TYPE OF TAX CREDITS WE ARE DISCUSSING HERE TODAY REQUIRES THAT YOU SPEND THE MONEY IN ORDER TO GET THE CREDIT - IT DOESN'T COST THE GOVERNMENT A PENNY UNLESS SOMEONE PUR-

CHASES THE EQUIPMENT. WITHOUT GETTING INTO THE "FEEDBACK" DEBATE ON REVENUES, IT DOES MAKE SENSE THAT ADDED PURCHASES OF EQUIPMENT LEADS TO INCREASED PRODUCTION, MORE JOBS AND EVENTUALLY, INCREASED REVENUES TO THE GOVERNMENT.

MR. CHAIRMAN, WE ARE AWARE OF THE BUDGET RESTRAINTS AND PROBLEMS THAT CAUSED SOME TAX INCENTIVES TO BE MODIFIED UNDER TEFRA. WHILE WE DO NOT AGREE WITH THE CHANGES LAST YEAR, PARTICULARLY WITH REGARD TO CAPITAL INTENSIVE SYNFUEL PROJECTS, WE ALSO BELIEVE THAT TRYING TO REEXAMINE THE TEFRA PROVISIONS THIS YEAR MIGHT RESULT IN NOTHING BEING DONE TO HELP THE DEVELOPMENT OF SYNFUEL PROJECTS. INSTEAD, AS I HAVE MENTIONED, THE RMOGA COMMITTEE ON OIL SHALE HAS ADOPTED A TAX POLICY THAT THE EXTENSION OF THE AFFIRMATIVE COMMITMENT DATES IS THE ONE CLEAR SIGNAL WITHIN THE CURRENT BUDGET RESTRAINTS THAT THE CONGRESS COULD GIVE TO THE INDUSTRY THAT WOULD BE MEANINGFUL.

WE APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE YOU TODAY, AND WOULD BE HAPPY TO ANSWER ANY QUESTIONS.

STATEMENT OF LYMAN SPENCER, SENIOR TAX ADVISER, GULF OIL CORP., DENVER, COLO., ON BEHALF OF THE RMOGA TAR SANDS COMMITTEE

Mr. **Spencer**. Mr. Chairman, my name is Lyman Spencer. I am a senior tax adviser for Gulf Oil Corp. and appear today in my capacity as chairman of the Tax Subcommittee of the Tar Sands Committee.

We appreciate this opportunity to express our views with respect to S. 1396, and other areas we believe to be of vital concern to the tar sands industry.

The Tar Sands Committee shares the same views as those expressed by the Committee on Oil Shale, and I will address only the additional areas of particular concern to the Tar Sands Committee.

When Congress originally enacted the energy credits for synfuel development, we believed that the congressional intent was clear, that equipment to produce a synthetic fuel from tar sands was to qualify for the business energy tax credit. However, the Internal Revenue Service disregarded the congressional intent and denied the credit. Because of this IRS position, we are strongly supporting S. 1396, which would include tar sands as property eligible for the energy credit.

A technical issue not addressed in S. 1396 but which is of particular concern to the tar sands industry is the clarification of the percentage depletion rules. Currently tar sands are not an identifiable mineral, nor are the processes for extraction identified. This lack of identification places tar sands in the general category of "other minerals" with a 14-percent depletion allowance, but does not identify the point at which gross income is to be determined for depletion purposes.

We would respectfully request that the mining processes for tar sands be described so that percentage depletion could be properly applied, and we will be happy to work with the subcommittee to provide language for this clarification.

In conclusion, we support S. 1396 and request the inclusion of a provision to clarify the percentage depletion rules, Mr. Chairman.

Thank you for this opportunity.

Senator **Wallop**. Thank you very much, Mr. Spencer.

[The prepared statement of Lyman Spencer follows:]

STATEMENT OF
LYMAN G. SPENCER
REPRESENTING
ROCKY MOUNTAIN OIL AND GAS ASSOCIATION COMMITTEE ON TAR SANDS
BEFORE THE
SENATE FINANCE SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION
ON
S. 1396

JUNE 17, 1983

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE, MY NAME IS LYMAN G. SPENCER. I AM A SENIOR TAX ADVISOR FOR GULF OIL CORPORATION AND APPEAR TODAY IN MY CAPACITY AS CHAIRMAN OF THE TAX SUBCOMMITTEE OF THE TAR SANDS COMMITTEE OF THE ROCKY MOUNTAIN OIL AND GAS ASSOCIATION (RMOGA). THE RMOGA TAR SANDS COMMITTEE REPRESENTS TEN COMPANIES INVOLVED IN THE DEVELOPMENT AND COMMERCIALIZATION OF TAR SANDS. WE APPRECIATE THIS OPPORTUNITY TO EXPRESS OUR VIEWS WITH RESPECT TO S. 1396, AND OTHER AREAS WE BELIEVE TO BE OF VITAL CONCERN TO THE TAR SANDS INDUSTRY.

MY COLLEAGUE HAS ALREADY ADDRESSED RMOGA'S POSITION REGARDING THE EXTENSION OF THE AFFIRMATIVE COMMITTMENT RULES, MITIGATION OF SOCIOECONOMIC IMPACT, AND THE EFFECTS OF TEFRA ON SYNFUEL PROJECTS. OUR COMMITTEE SHARES THE SAME VIEWS AS THOSE EXPRESSED BY THE COMMITTEE ON OIL SHALE AND I WILL ADDRESS ONLY THE ADDITIONAL AREAS OF PARTICULAR CONCERN TO THE TAR SANDS COMMITTEE.

WHEN CONGRESS ORIGINALLY ENACTED THE ENERGY CREDITS FOR SYNFUEL DEVELOPMENT, WE BELIEVED THAT THE CONGRESSIONAL INTENT WAS CLEAR THAT EQUIPMENT TO PRODUCE A SYNTHETIC FUEL FROM TAR SANDS WAS TO QUALIFY FOR THE BUSINESS ENERGY TAX CREDIT. HOWEVER, THE INTERNAL REVENUE SERVICE IN PUBLISHING THE RULES AND REGULATIONS INTERPRETING THE APPLICATION OF THE ENERGY CREDITS DENIED THE INCLUSION OF TAR SANDS EQUIPMENT. THE IRS TOOK THE POSITION THAT TAR SANDS AND OIL SHALE WERE NOT "ALTERNATE SUBSTANCES" AND THAT OIL PRODUCED FROM TAR SANDS OR SHALE WAS NOT A "SYNTHETIC FUEL." THE IRS STATED THAT SINCE CONGRESS PROVIDED A SPECIFIC CREDIT FOR OIL SHALE EQUIPMENT, THE OMISSION OF TAR SANDS EQUIPMENT EVIDENCED CONGRESSIONAL INTENT NOT TO INCLUDE THAT EQUIPMENT FOR ENERGY CREDIT PURPOSES.

IN TESTIMONY BEFORE THE IRS ON THOSE REGULATIONS, THE TAR SANDS INDUSTRY POINTED OUT THAT CONGRESSIONAL ACTION MADE IT CLEAR THAT CONGRESS REGARDED TAR SANDS AS AN ALTERNATE SUBSTANCE. WE FURTHER ARGUED THAT, OVER THE YEARS, CONGRESS HAS RECOGNIZED THE IMPORTANCE OF TAR SANDS AS AN ALTERNATE

ENERGY RESOURCE AND HAS EVEN DEFINED IT AS A "SYNTHETIC FUEL" UNDER THE ENERGY SECURITY ACT (P.L. 96-294). INDUSTRY FURTHER URGED THE IRS TO UPHOLD THE LEGISLATIVE INTENT OF THE ENERGY CREDIT TO REDUCE THE NATION'S DEPENDENCE ON THE USE OF OIL AND TO DEVELOP ALTERNATIVE SOURCES OF ENERGY.

NEEDLESS TO SAY, THE IRS REJECTED INDUSTRY COMMENTS. THE CURRENT POSITION BY THE IRS NOT ONLY DENIES THE CREDIT FOR TAR SANDS EQUIPMENT BUT VIOLATES THE CONGRESSIONAL INTENT OF THE STATUTE. MOREOVER, ONE OF THIS NATION'S GREATEST ALTERNATIVES TO OIL AND GAS - TAR SANDS - IS NOT EVEN CONSIDERED AN ALTERNATIVE SUBSTANCE OR SYNTHETIC FUEL FOR TAX PURPOSES.

BECAUSE OF THIS TREATMENT BY THE IRS, WE ARE STRONGLY SUPPORTING S. 1396 WHICH WOULD INCLUDE TAR SANDS EQUIPMENT AS PROPERTY ELIGIBLE FOR THE ENERGY CREDIT.

A TECHNICAL ISSUE NOT ADDRESSED IN S. 1396, BUT WHICH IS OF PARTICULAR CONCERN TO THE TAR SANDS INDUSTRY IS THE CLARIFICATION OF THE PERCENTAGE DEPLETION RULES.

CURRENTLY, CODE SECTION 613 DOES NOT LIST "TAR SANDS" AS AN IDENTIFIABLE MINERAL SUBJECT TO PERCENTAGE DEPLETION NOR DOES IT LIST THE PROCESSES CONSIDERED AS MINING FOR PURPOSES OF DETERMINING GROSS INCOME FROM MINING TO WHICH THE DEPLETION RATE APPLIES.

THIS LACK OF IDENTIFICATION PLACES TAR SANDS IN THE GENERAL CATEGORY OF "OTHER MINERALS" WITH A 14% DEPLETION

ALLOWANCE BUT DOES NOT IDENTIFY THE POINT AT WHICH GROSS INCOME IS TO BE DETERMINED FOR DEPLETION PURPOSES. WE WOULD RESPECTFULLY REQUEST THAT THE MINING PROCESSES FOR TAR SANDS BE DESCRIBED SO THAT PERCENTAGE DEPLETION COULD BE PROPERLY APPLIED. SUCH A PROVISION WOULD BE VERY SIMILAR TO THE CURRENT DEPLETION TREATMENT FOR OIL PRODUCED FROM SHALE. WE WILL BE HAPPY TO WORK WITH THE SUBCOMMITTEE TO PROVIDE LANGUAGE FOR THIS CLARIFICATION.

IN CONCLUSION, WE SUPPORT S. 1396 AND REQUEST THE INCLUSION OF THE PROVISION TO CLARIFY THE PERCENTAGE DEPLETION RULES.

MR. CHAIRMAN, THANK YOU FOR THIS OPPORTUNITY TO PRESENT OUR VIEWS AND WE WOULD BE HAPPY TO ANSWER ANY QUESTIONS.

STATEMENT OF WILLIAM H. HUDSON, PRESIDENT AND CHAIRMAN OF GNC ENERGY CORP.

Mr. HUDSON. I am William Hudson, president and chairman of GNC Energy. You have my comments, and if I may I will summarize a few points on them and address some of the other comments that have arisen here.

A word on tar sands. There are about 30 billion barrels in the United States, of which about 6 billion barrels can be identified to be recoverable by surface mining methods. In comparison, that 6 billion barrels is about the same as the reserves in the Prudhoe Bay field.

Our company has spent approximately $4 million researching processes and delineating the reserves on one of these resources in the United States, the Sunnyside project in Utah.

Last year Chevron joined us as managing partner and has now approximately matched our expenditures on this recovery process and on this resource.

It will take everything that you discussed—assistance from the Synthetics Fuels Corporation and as much tax advantages as we can obtain, to go forward specifically with this project. And that's where I'm addressing my comments.

How does this legislation and the standards of the United States zero in on a specific project? Our project is not economic at present oil prices. It is projected to be economic into the future. We are prepared to go forward with the assistance of the SFC and hopefully with the assistance of this act.

To state specifically what type of assistance finally makes a decision of go or no-go is always difficult. What straw broke the camel's back? And that's in the category in which we look at this legislation. We need it all. There are approximately 15 small companies which have requested assistance from the SFC in the tar sands business, of which of course we are one.

This legislation specifically helps the smaller companies to stay even, if you want, with the larger corporations in the energy area. This will be of greater assistance to us in financing our share of these projects than it would be to the majors.

I would like to address a little bit the comments on the tax costs and the results of the tax on this specific project.

We are discussing here approximately a capital cost of a billion dollars; so we are talking about $100 million, as the Treasury would say, of tax costs. But let's run through what the economics are on a discounted basis that this project would pay. We estimate it would pay $1,086,000,000 of taxes, either from wages, from profits on contractors, or income taxes in the project itself over the life of it.

Senator WALLOP. What would the life of the project be?

Mr. HUDSON. Twenty years. Five years of construction and 20 years of production. Excuse me.

I would like to specifically zero in on the costs that that this bill would cost—a billion-point-two.

Let's take it down to this project. This project would cost $100 million over a 5-year period from 1984 through 1989. But within that same 5-year period, we estimate that the taxes would be slightly greater on the wages and the profits of the subcontractors than the $100,000,000 tax credit. And, remember, they are not giving us the hundred million—that only arises if we spend the $1 billion. And during that same period that the hundred million is given to us, there will be a greater increase to the Treasury, either from taxable wages or from profits of the subcontractors during that period.

I would like to conclude in saying: Never forget, we are still importing 4 million barrels of oil, all of which money goes outside of this country. We need every bit of support we can to encourage this industry in this country at this time.

Thank you.

Senator **Wallop**. Thank you, Mr. Hudson.

[The prepared statement follows:]

Testimony of William H. Hudson, Chairman and President of GNC Energy Corporation, before the Senate Finance Committee, June 17, 1983, 10:00 a.m.

My name is William H. Hudson. I am Chairman of GNC Energy Corporation of Dallas, Texas. I appreciate this opportunity to testify before this committee on the importance of tax credits to the fledgling tar sands extraction industry.

GNC Energy Corporation is the original developer of a tar sands project near Sunnyside, Utah. GNC was recently joined by Chevron who has become the managing partner of the Sunnyside project which will begin producing some 1,500 barrels of oil per day (BPD) by the end of 1985. This will be the first stage of the planned 10,000 BPD unit to be on stream in 1988. The resource will support 50,000 BPD of syn crude to be enlarged depending on world pride of crude in the 1980s.

Tar sands are bituminous sandstones containing hydrocarbons which are potential sources of liquid fuels such as gasoline, jet fuels, heating oils.

The world's single largest deposit of tar sands is found in the Orinoco region of Venezuela which has been estimated to possess anywhere from 700 billion to 3 trillion barrels of oil. While Canada's Athabasca deposit is not even a third of the size of Venezuela's tar sands deposits, it represents the second largest deposit and the only one which has for several years been successfully producing oil from tar sands on a commercial scale. Known tar sands deposits worldwide are comparable in size or perhaps larger than the known reserves of conventional crude oil.

While the U.S.A. does not have tar sands deposits as large as those in Canada and Venezuela, U.S. tar sands reserves are substantial and contain perhaps as much as 30 billion barrels of oil. It must be emphasized that this potential oil is not necessarily recoverable oil. While 90% of the nation's tar sands deposits are located in the State of Utah, there are known tar sands reserves found in at least 22 states, with sizable deposits located in Kentucky, Alabama, Texas, New Mexico, and California.

There are a number of major differences between the bitumen in tar sands and typical heavy crude oil. Heavy crude oil is one which has high viscosity or which is difficult to pump at room temperature and because of its viscosity will not flow easily into a well bore. Tar sand bitumen has a viscosity which is perhaps ten times as high as heavy crude oil, which makes it virtually impossible to pump at room temperature and difficult to collect at a well bore. Tar sand bitumen also possesses an API gravity which is less than the gravity found in conventional heavy oils.

Congress recognized the differences between the bitumen from tar sands and heavy oil in Public Law 97-78 which amended the Mineral Lands Leasing Act of 1920. To distinguish tar sands from heavy oil, P.L. 97-78 defined tar sands as follows:

"the term 'tar sand' means any consolidated or unconsolidated rock (other than coal, oil shale, or gilsonite) that either: (1) contains a hydrocarbonaceous material with a gas-free viscosity, at original reservoir temperature, greater than 10,000 centipoise, or (2) contains a hydrocarbonaceous material and is produced by mining or quarrying."

Because of the significant differences between tar sands and heavy oil, companies developing tar sand reserves have been required to develop new technology aimed at extracting bitumen from the impregnated sand stone. While the deposit itself is usually mined or quarried in a manner similar to gravel or surface-mined coal, there is no single accepted technology for separating the hydrocarbon from the sands.

The process being utilized at the Athabasca tar sands project in Canada is one which uses hot water to loosen and separate the bitumen from the sand. Other projects in the United States utilize a solvent mixture, which, when mixed with pulverized tar sands, causes the bitumen to float to the top of the mixture where it is skimmed and the solvent is recovered for reuse. To be economic, such solvent processes must be able to recover 99% of the solvent introduced into the mixture.

The process which has been developed by GNC Energy in coordination with Morrison and Knudsen Engineering and Chevron involves combination of a cold water flotation process with solvent extraction.

Various bitumen separation processes also depend upon the specific nature of the tar sand deposit being developed. Some deposits contain a high volume of bitumen which can be economically recovered with a less sophisticated technology. Other deposits contain a water molecule in the composition of the resource which lends itself to more efficient hot water separation techniques. Other factors which determine the specific technology being employed include the availability of an adequate supply of water, content of metal substances in the bitumen (sulfur, vanadium, ferrous oxides), and the consistency of the sand stone in which the bitumen is impregnated.

Because each project is unique and must develop that technology which works best on its specific deposit and circumstance, a substantial amount of capital is required to develop a suitable separation technology. Once the technology has been developed, however, all projects must upgrade the bitumen before it can be introduced into conventional refineries. This involves a substantial additional expense which is not required in the development of most oils.

If I may, let me refer to GNC's experience at the Sunnyside project to demonstrate that which I have referred to.

GNC Energy Corporation has developed the technology to concentrate the bitumen in Utah tar sands to 30 percent by weight utilizing ambient temperature flotation techniques. The bitumen/sand separation is completed using liquid/liquid extraction. This technology has been demonstrated to the Synthetic Fuels Corporation in semiworks plants in Salt Lake City and Denver to confirm the beneficiation unit design criteria, to optimize the chemical usages, and to produce bitumen product for testing to confirm the design basis for the bitumen upgrading processes.

This project uses only equipment already available commercially. There is no prototype equipment that requires development. The project uses proven processing technology from several different industries and applies this technology to a new industry. The technologies used in this project are as follows:

o Open Pit Mining - Mining techniques are similar to those found in copper mining, and coal mining.

o Crushing and Grinding - Crushing and grinding operations are similar to those used in copper ore processing. This step is being demonstrated in the semiworks plant.

o Flotation - This operation uses the same techniques and equipment used in concentrating minerals. This step is being demonstrated in the semiworks plant.

o Liquid/Liquid Extraction - This step uses the countercurrent liquid extraction technology in mixer-settlers similar to the processing of many minerals and is being demonstrated in our Denver plant.

o Delayed Coking - Delaying coking, which is a standard oil refinery operation, is used for initial upgrading of the bitumen.

o Hydrotreating - Hydrotreating, which is a standard oil refining operation, is used for upgrading the coker distillate to a 35 API syncrude.

Cost estimates for this project are set at approximately $1 billion. While participation by Chevron, and, hopefully the Synthetic Fuels Corporation, will go a long way in arranging the financing for this project, the assistance of a 10 percent energy tax credit for tar sands capital costs would significantly enhance this project's ability to obtain financing.

Based on our analysis of detailed economic forecasts to construct and operate the 10,000 BPD Synnyside tar sand facility, if this plant is built and operated for its estimated twenty year life, the United States government would be paid income and payroll taxes of approximately $1,086,000,000. This is as against the approximately $100,000,000 of tax credits we are discussing.

Unlike assistance from the Synthetic Fuels Corporation (SFC), a tar sands tax credit would assist financing all projects that are ready to proceed with commercialization. The following is a list of the tar sands projects competing for financing with the SFC. Without a tar sands tax credit, many of these projects will never be able to obtain financing.

1. Santa Rosa Tar Sands Project, Santa Rosa, New Mexico
2. Calsyn Tar Sands Project, Pittsburg, California
3. Chaparrosa Ranch Tar Sands Project
4. Big Horn Oil, Inc.
5. International Hydrocarbons
6. California Tar Sands Dev. Co.
7. Cornell Heavy Oil Process, Dallas, Texas
8. Aarian Development Corporation, Utah
9. C & A Tar Sands Project
10. White Rocks Oil Sands Project
11. Forest Hill Tar Sands Project, Wood Co., Texas
12. Falcon Sciences Tar Sand Project, Butler Co., Kentucky
13. Porta-Plants Inc., Catalytic Conversion Project
14. Enpex Corp., La Jolla, California
15. Kentucky Tar Sands Project

STATEMENT OF JOSEPH M. SCHELL, VICE PRESIDENT, KIDDER, PEABODY & CO. INC., NEW YORK, N.Y.

Mr. SCHELL. Thank you, Mr. Chairman. I appreciate the opportunity to appear before you today in defense and support of Senate bill 1396.

In the current energy and economic environment, all forms of Federal financial assistance designed to encourage investment in alternative fuels projects are absolutely critical if such investments are to continue.

As I think has been expressed adequately by this panel, synthetic fuel projects, whether they be shale oil, or coal gasification, or tar sands are long-term investment projects requiring huge amounts of up-front investment capital from the private sector.

When an investor decides to make such an investment, he analyzes his profit potential, making a whole bunch of assumptions about the future, not the least of which is consistency of Government policy on such items as tax matters. This consistency certainly has been eroded recently, such that the private sector is losing faith in the long-term commitment of its elected officials to understand the basic economics of capital formation.

It was understood when the Economic Recovery Tax Act was passed, and then there was an erosion of that with TEFRA. The evidence in the synthetic fuels industry is the recent cancellation of many qualified, well-supported by equity sponsors projects in that industry.

Now, in the face of deteriorating near-term economics due to oil price reductions by OPEC recently, earlier this year, it should be evident that the Government needs to at least maintain its incentive programs instead of erode its incentive programs to encourage investment. So, for that reason if no other, we strongly support 1396 to continue the incentive programs that are on the books today.

I would like to turn now to the attractiveness of the energy tax credits from the point of view of supply-side economics, in that they do encourage investment at very little if any cost at all.

I am somewhat surprised that the Treasury official, Mr. Ballentine, did not recognize this in his remarks.

As was mentioned just a few minutes ago by Mr. Hudson, just the jobs created, if we only look at the jobs created to build a major synthetic fuel plant—and I will use a Western shale oil plant as an example—there is on average 2,000 men and women who would be employed for an average of 3 years, 36 months, to construct that facility. At today's wage rates, those people would pay into the Treasury exactly the same—at a 25-percent tax rate, exactly the same dollars—that the Treasury would commit in the form of energy tax credits to the project sponsors.

So, not only is there no revenue impact, there is no lag in recovery to the Treasury of the revenues that it forewent by having the energy tax credits on the books.

Later, when the project is in operation, the taxes paid by the operating labor force and by the project itself on the taxable income that must be there to assume a profit potential and to encourage the investment are so much greater—10 to 15 times greater—than the investment the Treasury is making.

If you look at ITC and ETC as an investment, then it makes very little sense not to keep these kinds of incentives available to private sector sponsors, to encourage the kind of investment in synfuels that this country desperately needs.

Thank you very much.

Senator WALLOP. Thank you, Mr. Schell.

[The prepared statement of Joseph M. Schell follows:]

PREPARED STATEMENT OF JOSEPH M. SCHELL

Mr. Chairman, members of the Subcommittee, my name is Joseph M. Schell. I am a Vice President and Director of Kidder, Peabody & Co. Incorporated, a large investment banking and brokerage firm headquartered in New York City. During my ten years at Kidder, Peabody, I have concentrated on energy sector financing, with a specific focus during the last 2½ years on alternative energy as Director of our Synfuels Group.

I appreciate the opportunity to present to the Subcommittee my views on S. 1396, as introduced by Senator Domenici. My specific interests are with Section 3, which extends the affirmative commitment deadline, and Sections 5 and 6, which clarify the definition of qualifying synthetic fuel production equipment. I will limit my discussions to these sections of the Bill, as I feel most qualified to address them.

By way of background, let me take a minute to explain Kidder, Peabody's role in the synthetic fuel industry. In 1980, Kidder, Peabody organized a Synfuels Group to provide in-depth financial services to the developing synthetic fuels industry. The Synfuels Group's responsibilities touch on each phase of a successful synthetic fuels project financing--the initial conception, the economic and financial analyses, the development of an optimum financing program, the identification and solicitation of equity sponsors, the negotiation of terms of any financial assistance made available through U.S. Federal Government Federal programs and the structuring and sale of equity and debt securities. In addition to our other assignments, the Synfuels Group is currently acting as financial advisor to two synthetic fuels projects--one coal-based and the other shale oil--which have recently entered into negotiations with the U. S. Synthetic Fuels Corporation for financial assistance.

There are two principal reasons why Sections 3, 5, and 6 of S. 1396 are vital to the commercial development of a synthetic fuels industry in the United States.

First, energy tax credits are critical to the economic analysis on which the private sector bases its investment decisions on synthetic fuels production facilities. In assessing a synthetic fuel project's economic viability, extensive financial analysis is required. This analysis incorporates the financial impact of such incentives as investment and business energy tax credits, loan guarantees, price guarantees, as well as other applicable provisions within the U.S. Tax Code. The purposes of the analysis is to justify to the private sponsors that the projected returns warrant the huge capital investments that are required.

To be sure, the Federal Government has provided a variety of financial incentives for the construction and use of synthetic fuel production equipment. These incentives take many forms and serve any of a number of separate and distinct purposes from the viewpoint of lenders and equity investors.

The purposes of these incentives are perhaps best viewed by reference to the factors which an investor in synthetic fuel projects must consider. First, one must consider the basic economics of a project—whether, if everything goes as expected, it will be profitable. Profitability is typically defined by the private sector as an adequate cash return over time on the original investment. In cases where the projected returns appear insufficient to encourage private investment in projects having national security implications, the Federal Government may (i) improve the investment fundamentals by making grants or providing tax credits during the construction period thereby reducing the investment required and raising the return and (ii) reduce the risk through loan or price guarantees thereby making the projected returns more acceptable.

Fortunately, the Congress has shown foresight in its efforts to encourage private sector investment in alternative energy projects by providing various forms of incentives. The intent of Congress was to provide incentives, to be used singularly or in combination, to assist the business community, but only to the minimum extent necessary to induce private investment.

Unfortunately, we have seen in the last year that even with the availability of these credits and other forms of Federal financial incentives, many synthetic fuel projects were cancelled as a result of a lack of private sector investment. Therefore, it is difficult to draw a conclusion that suggests that business energy tax credits are not needed to encourage such investment. To the contrary, as envisioned in Senator Domenici's Bill, an expansion of these credits is required to encourage existing projects to stay the course.

The second reason S. 1396 is vital is that passage of this legislation will demonstrate to project sponsors the existence of continued Congressional intent to support alternative energy production. The development of a commercial synthetic fuels industry is a long-term proposition. Acquiring a resource position, gaining all necessary environmental clearances, arranging the financing and constructing a plant is a process which takes many years. In addition, the private sector is absolutely dependent on consistent governmental policies throughout the long development process because changes which appear only minor in the overall scheme of things can have catastrophic effects on a new-born industry. While it is admittedly difficult to document, it is my opinion that the recent shrinkage in the synthetic fuels industry can be partially attributed to the sense among certain private sector concerns that the U. S. Government has been a fickle partner. The Federal Government incentives embodies in the Energy Security Act and The Economic Recovery Tax Act of 1981 were undermined by well-publicized misgivings about synthetic fuel development among certain members of the Administration and Congress and by certain provisions of The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA). Passage of S. 1396, in my opinion, will have a significant positive impact on investors which may counterbalance the decidedly negative impacts of certain provisions of TEFRA and recent legislative initiatives to curtail the funding authority of the U.S. Synthetic Fuels Corporation.

The revenue impact to the U. S. Treasury of ETC is actually positive assuming that the availability of ETC is critical to the original investment decision.

Any analysis of a continuation and/or expansion of business energy tax credits must examine the revenue impact on the U. S. Treasury of providing such credits. While there is a "revenue loss" to the Treasury to the extent that project sponsors are able to use the credits to offset taxes otherwise payable, we must also consider the revenue gain to the Treasury flowing from income taxes paid by construction and operating personnel as well as tax receipts generated by the project itself.

To highlight my belief that the ETC will actually have a positive revenue impact, I will use a simple example of a typical western U.S. shale oil project.

A typical 10,000 - 15,000 barrel per day shale oil project will require approximately 3 years to construct and will cost in excess of $1.3 billion when completed. Under existing law, the equity sponsors receive energy tax credits of approximately $50 million in this period, or approximately $17 million per year, assuming that the project met the affirmative commitment rules by January 1, 1983. During this three year period, average annual income taxes paid by construction workers would be approximately $17 million per year. Therefore, the U. S. Treasury recovers its "investment" in the project in the form of energy tax credits in each year of construction as a result of federal income taxes paid by workers (see Exhibit I). Further, during the project's operations, the U. S. Treasury collects approximately $2.3 billion in tax receipts, as described below.

An alternative way of analyzing the revenue impact is to view the U. S. Government as an "investor" in a synthetic fuels project. Its investment is equivalent to revenues foregone due to the utilization of ITC and ETC by the corporate sponsors and its return is income taxes paid by the project's labor force during both the construction and operating periods and by the project itself on its taxable income generated over the life of the project.

TREASURY'S INVESTMENT

ITC	$ 90 million
ETC	$ 50 million
TOTAL:	$ 140 million

TREASURY'S RETURN

Income taxes payable by construction labor	$ 50 million
Income taxes payable by operating labor	$1,650 million
Income taxes payable by Project	$ 700 million
TOTAL:	$2,400 million

With a seventeen-fold recovery of its investment, the returns to the U. S. Treasury are very handsome indeed. Naturally, this example is oversimplified in order that the conclusion not get lost in excessive arithmetic. In the near-term, there is no revenue impact since ETC credits taken on a progress expenditure basis during the construction period would be directly offset by estimated income taxes payable by the construction labor force. In the out years, income taxes payable by the operating labor force and the project itself exceed even the most optimistic dreams of the supply-side advocate. Of course, this all assumes that the availability of tax credits is integral to the decision by the private sector to proceed with the project. My somewhat frustrating experience in raising capital for synthetic fuels projects over the last several years strongly suggests that every component of the return equation is absolutely critical.

The impact of The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) on synthetic fuel project financing.

Over the last two years, a limited number of synthetic fuels project sponsors have spent a significant amount of capital on up-front development of synfuel projects on the basis that the economic returns to the project sponsors would justify the projected expenditures. As stated earlier, the economic returns that were projected were highly dependent on a consistent application of the then-applicable tax laws. Further, the economic returns available to the private sector sponsors of these projects are highly dependent on future energy prices. Several years ago, energy economists were uniformly predicting 2% - 3% real growth in energy prices. Now there is no uniformity in energy price forecasting other than that there have been significant downward revisions for at least the rest of this decade. These forecasts, coupled with recent reductions in the tax benefits made available to promote capital investment in energy projects, has complicated the job of attracting sufficient private sector investment in synthetic fuels production facilities.

The uncertainty now attached to the assumption of consistent federal tax treatment, as a result of the passage of TEFRA, merely compounds the other technical and market uncertainties of a synthetic fuels project, thereby increasing the return requirements of the few industrial sponsors willing to take the long-term perspective necessary for the establishment of a domestic synthetic fuels industry.

Specifically, TEFRA adversely impacts the economic returns of synthetic fuels investment through the following four provisions:

1. Section 204 -- This section provides that 15% of the cost of mineral exploration and development incurred in any one year must now be capitalized, rather than be expensed.

2. Section 205 -- This section provides for a depreciation basis reduction to reflect 50% of the investment tax credit and the business energy tax credit taken.

3. Section 206 -- This section repeals the ACRS treatment in 1985 and 1986 which was specified in the Economic Recovery Tax Act of 1981.

4. Section 207 -- This section provides for the capitalization of construction period interest and taxes on real property investments.

To provide a specific example of the impact of these TEFRA provisions, Kidder, Peabody completed several financial analyses last December of typical synthetic fuel projects, on a pre-TEFRA and post-TEFRA basis. In summary, the returns fell between 18% and 25% on these projects. More importantly, the returns fell well below those necessary to retain the interest of existing sponsors and to attract additional sponsors.

Thus, many synthetic fuel projects currently under consideration by the SFC will require larger amounts of financial assistance in the form of loan and price guarantees to offset the negative impact of TEFRA. It is my view that the incentives provided under the U. S. Tax Code prior to the passage of TEFRA were a far greater economic stimulus than additional amounts of U. S. Synthetic Fuels Corporation loan and price guarantees.

It should be clear, given the slow progress in the development of synthetic fuels projects in this country, that there is little incremental revenue gained by the U. S. Treasury as a result of subjecting the few remaining synthetic fuels projects to these provisions of TEFRA. It should be equally clear that the cumulative effect of Sections 204, 205, 206 and 207 of TEFRA, adopted at a time of eroding oil prices and slow economic growth, has impeded the establishment of a domestic synthetic fuels industry in the near-term and thereby is inconsistent with the national security considerations which provide the foundation of the Energy Security Act.

Consequently, Kidder, Peabody strongly recommends that the necessary legislative steps be taken to exclude near-term synthetic fuels production facilities, in which significant development expenditures had been made prior to the enactment of TEFRA, from Sections 204, 205, 206 and 207 of that Act.

U. S. Federal Government policy options which the Subcommittee may consider in order to stimulate the development of synthetic fuels technology:

At this time of plentiful supplies of motor fuel at reduced prices relative to price trends in the last three years, U. S. automakers are finding a greater demand for larger and less fuel efficient automobiles. If this demand continues, it may impact their ability to meet the fuel economy standards under the Energy Policy and Conservation Act and require substantial penalty payments from an industry which can ill-afford them. Therefore, in an effort to find a solution to this problem as well as to promote the use of synthetic fuels such as methanol produced from coal, the Congress may wish to consider a higher mileage credit for these automobiles designed to operate on methanol enhanced fuels in the computation of Corporate Average Fuel Economy Standards (CAFE). Discussions of this option within this Subcommittee, as well as within other Committees and Subcommittees of jurisdiction, would, at least, focus attention on an incentive which has no budgetary impact and aids the domestic auto manufacturers whose participation is integral to the full realization of our synthetic fuels potential.

EXHIBIT I

IMPACT OF BUSINESS ENERGY TAX CREDITS ON U. S. TREASURY RECEIPTS

ENERGY TAX CREDITS AVAILABLE TO EQUITY SPONSORS OF A TYPICAL SHALE OIL PROJECT

ENERGY TAX CREDIT CALCULATION:

o	$1.3	Billion construction cost
	x .38	Percent of construction costs qualifying for ETC
	$494	Million qualified expenditure
	x .10	Energy Tax Credit in the construction phase
	$49.4	Million Energy Tax Credit

o **$16.4 Million per year average Energy Tax Credit taken.**

INCOME TAXES PAID BY LABOR FORCE DURING CONSTRUCTION PERIOD

INCOME TAXES PAYABLE CALCULATION:

o A typical shale oil project will employ 2,000 people in the construction phase (1984 - 1986).

o Average hourly wage rate (escalated) = $15.00

o Annual wages per person (escalated) = $30,000

o Annual income tax per person (escalated) = $8,500

o Other federal, state, and local taxes which will be paid in relation to construction of this project are not factored in.

o Total income taxes during construction period = $51 million

o **Average annual income taxes per year = $17 million**

Senator WALLOP. I don't really have any questions of anybody, because I agree with what you have said.

There are two things that leap out at me from the testimony here this morning: One, that there is, from the standpoint of Government, is the relatively cheap employment effects.

And if you turn the coin over that you have raised, Mr. Schell, Mr. Hudson, and Mr. Miller, you find that not only is there a potential for relative equality of expenses versus income to the Treasury over the near term of it. The other side of the coin is, what of the unemployment that must be paid to people who are not employed, to the engineers, and to others?

Treasury's position, as I understand it, is that somehow or another this diverts money away from projects that would otherwise be undertaken in the economy. There may be some validity to that; there probably is—some—but I don't think as much as they say.

But then when you couple that with the thing that seems obvious to people who have viewed the energy situation, our inability to control events in the world that are necessary to energy security, even at home but particularly abroad, and the rest of the industrial world's reliance on supplies of energy from the same sources that we find ourselves gradually creeping into re-reliance upon, it just seems that it is not possible in this particular area to have sufficient predictability in free market forces to look after the long-term interests of the people of the United States.

I don't know quite how we go about changing Treasury's mind on this. We probably won't change the Treasury's, but you might be able to change the administration's mind.

I recall one witness from the Treasury Department in those land hearings that I held, when the Treasury man said, "We collect taxes. That's what we do." It is very hard to pry that narrow view loose into a broader horizon of national interests without minimizing what the Treasury's role is in the national interest.

I would hope that you would take these messages not only that you have delivered here, but that you would take them out to the rest of the Congress and to the country, to try to persuade it that this is not some kind of a hokey thing for big-energy interests but is something very specifically in the near and long-term interests of this country's future.

So I thank you very much for your presence here this morning.

The next panel consists of Mr. J. Steven Anderson, director of energy at the International Paper Co., on behalf of the American Paper Institute; Mr. Michael Zimmer, secretary and general counsel of Cogeneration Coalition, Inc., Washington, D.C.; Mr. Joel Weiss, Washington representative of the Acurex Solar Corp., on behalf of the Solar Energy Industries Association; Mr. Robert Roach, Washington representative of the Environmental Policy Center; Mr. Granville J. Smith. chairman of the board, Energetics Systems, Inc., on behalf of the National Hydropower Association.

Mr. Anderson, if you would begin, please.

STATEMENT OF J. STEVEN ANDERSON, DIRECTOR OF ENERGY, INTERNATIONAL PAPER CO., INC., NEW YORK, ON BEHALF OF AMERICAN PAPER INSTITUTE, WASHINGTON, D.C.

Mr. ANDERSON. Good morning, Mr. Chairman.

My name is Steven Anderson. I am director of energy for the International Paper Co. I have with me Mr. Stanley Kelly, who is a tax manager from the Westvoso Corp.

I am appearing before this subcommittee this morning on behalf of the American Paper Institute and the National Forest Products Association. These are two associations that represent producers of wood-derived products, including paper and building products.

Let me begin by expressing our industry's appreciation to Senator Domenici for his sponsorship of S. 1396 and to Chairman Wallop for his continuous support of incentives to encourage capital investment in energy productivity and efficiency. We especially appreciate the efforts of Senator Packwood, for we feel his bill, S. 1305, approaches the concept of energy tax credits in a manner that will encourage and accelerate investment in energy conservation.

We recognize a concern over continuing large Federal deficits can influence decisions relating to energy tax credits; yet, we believe the concept of energy tax credits such as those contained in S. 1305 is sound and essential in order to move the Nation another step closer to energy independence.

Some indication of the recent acceleration of energy investments and productivity advances was provided by pulp and paper industry comparisons for the years 1972 to 1978, before energy tax credits, and 1978 to 1982, when energy tax credits were available.

Between 1972 and 1978, fossil fuel and purchased energy per ton of output was reduced by 18.4 percent. Between 1978 and 1982 the drop was 20.7 percent.

The paper and wood products industry's longstanding commitment to reduced dependence on foreign oil is further illustrated by its increase in energy self-sufficiency, from 40.4 percent in 1972 to 51.7 percent in 1982.

We have also made significant strides in cogeneration, another form of energy saving. The paper and wood products industry now accounts for about 50 percent of all the cogeneration in the United States.

Let me explain now how energy tax credits impact our industry:

Energy tax credits increase a project's return on investment. Industry studies have show that energy tax credits raise the return on investment—ROI—between 2 to 4 percent for most projects. To put that in perspective, my own company had a project that was made uneconomical by the drop in oil prices which reduced the ROI to the point where only the availability of the energy tax credit would have made the project attractive.

In the paper and wood products industry, our experience has been that certain projects have been accelerated in order to qualify for the energy credit. Also, the energy credit has had a positive impact on energy capital expenditures in that it improves the attractiveness of energy projects over nonenergy projects.

Generally what happens when a company sets its priorities for capital expenditure is that projects are divided into two priority categories. The first category is comprised of projects motivated by competitive necessity or by law or regulation, such as EPA's environmental standards. The second category, into which energy-related capital projects generally fall, is a discretionary category in which projects are prioritized and undertaken based upon their economic attractiveness and the availability of capital. The ususal situation is that there are more projects available in this category than the capital required to fund them, and projects at the lower end of the attractiveness range lose out in competition for approval.

The effect of the energy credit has been to move energy-related capital projects falling into this discretionary category from the lower end or the middle of the pack to the middle or upper end. This increase in priority has the effect of accelerating expenditures which are energy beneficial and, in some cases, has resulted in energy-saving capital projects which would not have been undertaken absent the energy credit.

In summary, our industry's experience clearly shows that energy tax credits have had a positive effect on energy-conserving technologies and conservation.

Thank you very much.

Senator WALLOP. Thank you, Mr. Anderson.

[The prepared statement of J. Steven Anderson follows:]

TESTIMONY BEFORE THE SENATE FINANCE COMMITTEE

SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION
ON ENERGY TAX CREDITS
BY THE AMERICAN PAPER INSTITUTE
AND NATIONAL FOREST PRODUCTS ASSOCIATION
JUNE 17, 1983

I am J. Steven Anderson, Director of Energy, International Paper Company. I have with me Mr. Stanley Kelly, Tax Manager, Westvaco Corporation. I am appearing before this Subcommittee on behalf of the American Paper Institute and the National Forest Products Association. These two associations represent producers of wood derived products, including paper and building products.

Let me begin by expressing our industry's appreciation to Senator Domenici for his sponsorship of S. 1396, and to Chairman Wallop for his continued support of incentives to encourage capital investment in energy productivity and efficiency technologies. We especially appreciate the efforts of Senator Packwood, for we feel his bill, S. 1305, approaches the concept of energy tax credits in a manner that will encourage and accelerate investment in energy conservation. We share your feeling that attention to national energy policy is particularly appropriate at this time, because of the continuing need for both business and individuals to conserve fossil fuel use and generate improvements in energy productivity as one ingredient toward non-inflationary economic growth.

Yet we watch with alarm as the nation becomes increasingly complacent about energy conservation in response to what is clearly a short term market phenomenon. Senator Domenici recognized this problem when he said, in his introduction of S. 1396, that, "The worldwide recession, the temporary glut of crude oil and the sharply decreasing prices for that oil, resulted in many projects being placed on the backburner...." This is clearly not the time to ease up on energy efficiency measures required over the long term, which are designed to reduce or eliminate the impact of future disruptions in oil supplies and higher prices. We recognize that concern over continuing large federal deficits can influence decisions relating to energy tax credit. Yet, we believe the concept of energy tax credits, such as those contained in S. 1305, is sound in order to move the nation another step closer to energy independence.

Some indication of the recent acceleration of energy investments and productivity advances is provided by pulp and paper industry comparisons for the years 1972-78, before energy tax credits, and 1978-82 when energy tax credits were available.

Between 1972 and 1978 fossil fuel and purchased energy per ton of output was reduced 18.4%; between 1978 and 1982 the drop was 20.7%. On an annual basis, fossil fuel and purchased energy per ton of output decreased by 2.9% per year for the period 1972-78, and by over 4.8% per year for the 1978-82 period.

The industry's total consumption of fossil fuels and purchased energy decreased by 9% between 1972 and 1978, and by 14% from 1978 to 1982, when energy tax credits were available. On an annual basis, the rate of decrease was 1.5% per year in 1972-1978; thus annual reduction more than doubled to 3.4% per year between 1978 and 1982. In the lumber and wood products industry, the proportion of biomass fuels in the fuel mix increased by 8% between 1978 and 1982.

The paper and wood products industry's long standing commitment to reduced dependence on foreign oil is further illustrated by its increase in energy self-sufficiency, from 40.4% in 1972 to 51.7% in 1982. By burning its non-fossil fuels and wood residues (spent pulping liquors, bark and hogged wood), the industry has succeeded in saving the annual equivalent of approximately 168 million barrels of oil or about 37 days of current U.S. oil imports.

We have also made significant strides in cogeneration, another form of energy saving. The paper and wood products industry now accounts for about 50% of all cogeneration in the U.S. Some 37% of the paper industry's own electricity demand is currently cogenerated, representing an annual fuel savings to the nation of 22 million barrels of oil equivalent, or more than 5 days of U.S. oil imports at the current rate. Energy tax credits have contributed to that achievement, and the industry can do even more. The technological capability exists for the paper industry to expand its present cogeneration capacity significantly.

Let me end by quickly outlining how energy tax credits impact our industry, by fostering investment and enabling us to continue our policy of energy conservation.

We believe that they have been and will continue to be effective in contributing to significant energy savings for the industry in many ways.

They are needed to help finance the investment in energy savings technology that will be required by the industry.

Energy tax credits will help the industry adjust to the high costs of ever changing and improving technology. They will further more development of energy saving devices, some of which would never reach the test stage without an improved return on the investment.

Energy tax credits increase a project's return on investment (ROI). Industry studies have shown that energy tax credits raise the return on investment between 2-4% for most projects. To put that in perspective, my own company had a project that was made uneconomical by the drop in oil prices which reduced the ROI to the point where the energy tax credit would have made the project marginally attractive. Another factor of importance is the increase in cash flow generated by the availability of energy tax credits.

The major contribution of energy tax credits in our industry has been the acceleration of investments in energy efficiencey and productivity. This was a particularly significant contribution during the past several years, when our industry experienced a sharp contraction in retained cash flow as a result of the recession.

Let me conclude by sharing with you some analyses and comments reported by more than one company. I believe this represents fairly typical situations in our industry.

In the paper and wood products industry, our experience has been that certain projects have been accelerated in order to qualify for the energy credit. Also, the energy credit has had a positive impact on prioritizing of capital expenditures in that it improves the perceived priority on energy projects over other non-energy projects.

Generally what happens when a company sets its priorities for capital expenditure is that projects are divided into two priority categories. The first category is comprised of projects motivated by competitive necessity or by law or regulation, such as the EPA's environmental standards. The second category, into which energy-related capital projects generally fall, is a discretionary category in which projects are prioritized and undertaken based upon their economic attractiveness and the availability of capital. The usual situation is that there are more projects available in this category than the capital required to fund them, and projects at the lower end of the attractiveness range lose out in the competition for approval. The effect of the energy credit has been to move energy-related capital projects falling into this discretionary category from the lower end or the middle of the pack to the middle or upper end. This increase in priority has the effect of accelerating expenditures which are energy beneficial and, in some cases, has resulted in energy-saving capital projects which would not have been made undertaken absent the energy credit.

In summary, the industry's experience clearly shows that energy tax credits have had a positive effect on energy conserving technologies and energy conservation.

Summary

American Paper Institute and
National Forest Products Association

1. Energy tax credits increase a project's return on investment and cash flow, helping to make energy efficiency investments competitive with other capital investments.

2. In our industry the availability of energy tax credits has helped to accelerate energy conservation expenditures.

3. Extension of ETC's will generate additional energy investments, which will strengthen the economic recovery and reduce inflationary pressures.

4. Energy tax credits have encouraged energy efficiency through reductions in energy use per unit of output.

5. The paper industry has increased its energy self-sufficiency from 40.4% in 1972 to 51.7% in 1982. This represents a savings of the annual equivalent of approximately 168 million barrels of oil, or about 37 days of current U.S. oil imports.

   The wood products segment of the forest based industry has reduced fossil fuel use by over 18 percent since 1978.

6. Cogeneration in the pulp and paper industry, encouraged by energy tax credits, now provides 37% of the paper industry's own electricity demand.

7. Energy saving technologies are constantly changing and becoming more costly to produce and operate, but capital availability remains a major constraint. Extending energy tax credits will help sustain a high level of energy conservation expenditures in the future.

STATEMENT OF MICHAEL ZIMMER, SECRETARY AND GENERAL COUNSEL OF COGENERATION COALITION, INC., WASHINGTON, D.C.

Mr. ZIMMER. I appreciate the opportunity to testify before you this morning on behalf of the Cogeneration Coalition, Inc., in support of the broad purposes of S. 1396 pending before the subcommittee today.

Cogeneration is one of the foremost energy efficiency technologies currently available in the United States with a major potential existing for use in the forest products, paper, steel, food processing, chemical, and petroleum refining industries. The potential market for implementation of this energy efficiency technology is projected to reach $20-$30 billion by 1990. This technology is currently being employed by industries and commercial users and, in 1982 it contributed almost 5 percent, approximately 113 billion kilowatt-hours of the total electric power production in this country.

We also support, with respect to these hearings, the broader purposes undertaken today by the subcommitee in its review of the availability of energy tax credits. We believe this is a very timely issue as many renewable energy, synthetic fuels, and cogeneration projects are entering critical decisionmaking on ultimate development and construction.

We are testifying as well to draw attention to the availability of a broader, more comprehensive bill which also merits close subcommittee review and scrutiny as embodied in S. 1305. This bill, as introduced recently by Senators Packwood and Matsunaga, would reinstate the cogeneration tax credit as well as address other provisions dealing with renewable fuel technologies.

In that regard, the nature of proceeding with further review and development of energy tax credit legislation is very much contingent upon the question alluded to by the Treasury Department this morning regarding the presence of a free marketplace for energy development.

We believe that today's energy marketplace is not necessarily a free market for the provision of electricity, or natural gas, and other fuels—electricity and natural gas, particularly, the subject of current Federal and State regulations.

Favorable tax treatment also exists in the form of expensing of extraction costs and using depletion allowances for certain other types of fuels, while business use of various fuels is an ordinary and necessary business expense deductible in the computation of Federal income taxes.

Tax incentives such as we currently have under review before the subcommittee today rectify these imbalances in our economic system. They address the perceived risks associated with the technologies by offering a premium incentive for investment in such projects, and they offset the tax benefits of expensing usage of fuels by business in general.

Reduced energy costs also have the potential to reduce tax deductions with positive feedback effects offsetting revenue losses, as alluded to by many of the previous witnesses today.

Increased economic activity associated with cogeneration specifically will add additional business developing and jobs subject to Federal taxation, offsetting any potential revenue losses associated with the legislation currently before the committee.

These projects are being financed using tax credits, which basically provide three fundamental benefits:

First, they are self-implementing and do in fact rely on free market decisionmaking in the sense that they are implemented through one's annual tax filing, and do not require implementation through a large Government grant process.

Second, they are available on a timely basis when the system is placed in service, and valued at close net present value unlike depreciation allowances;

And, finally, its value to the taxpayer, unlike depreciation allowances, is constant and not contingent upon the marginal tax rates of the particular investors.

We appreciate the opportunity of testifying here this morning and look forward to the opportunity of answering any questions which you may have.

Senator Wallop. Thank you very much, Mr. Zimmer.

[The prepared statement of Michael J. Zimmer follows:]

WRITTEN TESTIMONY
OF
MICHAEL J. ZIMMER
SECRETARY AND GENERAL COUNSEL
OF
THE COGENERATION COALITION, INC.
ON THE
ENERGY SECURITY TAX INCENTIVES ACT OF 1983
(S. 1396)
BEFORE THE
SENATE FINANCE SUBCOMMITTEE
ON ENERGY AND AGRICULTURAL TAXATION
JUNE 17, 1983

The following written testimony is filed on behalf of the Cogeneration Coalition, Inc. (Coalition) on the Energy Security Tax Incentives Act of 1983 (S. 1396) which is currently pending before this Subcommittee. The Coalition is a non-profit organization comprised of interested natural gas utilities, industrial users, industrial and commercial equipment manufacturers, project developers and engineering and construction consulting firms. 1/ The Coalition has also established advisory working relationships with other national interest groups and trade associations on issues affecting cogeneration development. The Coalition supports the provision of necessary financial and tax incentives to promote the full utilization of cogeneration technology and the removal of unnecessarily restrictive federal

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1/ The current membership of the Coalition includes: Kimberly Clark Corp., Brooklyn Union Gas Company, Great Lakes Carbon Corp., Thermo Electron Corp., National Urban Energy Corp., Big Six Towers, Williams & Works Industrial CoEnergy Systems, Inc., and Southern Connecticut Gas Company as well as several other national trade groups and organizations supporting cogeneration development.

barriers to the development of cogeneration potential nationwide.

Introduction

Cogeneration is one of the foremost technologies for the efficient use of energy currently available in the United States. It involves the sequential use of energy to produce electricity or mechanical shaft power and some other useful form of energy (usually heat or steam) from the same energy source. Major potential exists in the forest products steel, food processing, chemical and petroleum refining industries for the application of this technology.[2/] (See Attachment 1)

A recent study for the Department of Energy (DOE) on Industrial Cogeneration Potential (1980-2000) evaluated sixteen cogeneration technology/fuel combinations at 10,000 plant sites throughout the country. Based upon this analysis, 3131 plant sites were identified as viable candidates for such projects. These plants represented the maximum potential within the scope of this study based on a heat match analysis, utility rates, and accelerated depreciation and offer 42,824 megawatts of electric power--or the equivalent of 40-50 baseload powerplant generation stations. (See Attachment 2)

These plants also represent approximately 2 quads of potential energy savings including the energy savings at the

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[2/] See Resource Planning Associates, The Potential for Industrial Cogeneration Development by 1990 (July 31, 1981), p.ii.

plant site as well as the utility powerplant. DOE also concludes that 52% of the potential cogeneration will occur in the South Atlantic, South West, and Western regions. Twenty-five percent (25%) of the potential is in the Mid-Atlantic region spreading into New England. (See Attachment 3) California has the largest potential of 8,537 MW followed closely by Louisiana (6,202 MW), Texas (5,878 MW), Pennsylvania (4,172 MW), Illinois (2,452 MW), New Jersey (2,323 MW) and Ohio (2,280 MW). (See Attachment 4)

Other potential applications for cogeneration of a non-industrial nature include water desalinization plants, pipeline compressor stations, multi-family residential and commercial complexes, hotels, universities, hospitals and military bases. [3/] For instance, Hagler, Bailly & Co. estimates there is currently about 560 MW of commercial/residential cogeneration capacity currently installed at about 300 sites across the U.S.

Coalition Supports Goals of S. 1396

The membership of the Coalition supports the broad purposes of S. 1396 which provides an extended period of time in which certain renewable energy and synthetic fuels property will remain eligible for energy tax credits. Many of these types of projects may also consider the deployment of cogeneration

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[3/] For more detailed analysis of non-industrial cogeneration applications, see OTA, Energy Efficiency of Buildings in Cities (March, 1982); Gas Research Institute, Cogeneration Energy Systems Assessment (January, 1982); and OTA, Industrial and Commercial Cogeneration (March, 1983).

technology, particularly for biomass and synthetic fuels plants, and the certainty and relief provided by S. 1396 would be welcomed at a minimal cost to the American taxpayer through reduced Treasury revenues. This critical review by this Subcommittee of the availability of energy tax credits is timely as many renewable energy and cogeneration projects enter critical decision-making on ultimate development and construction. Larger scale energy projects may also require significant lead times with substantial front-end capital requirements which the availability of energy tax credits can offer a significant contribution.

Because of the unique circumstances regarding cogeneration--which specific energy tax credit was permitted to expire on December 31, 1982--the Coalition believes that a broader, more comprehensive bill also merits close Subcommittee review and scrutiny as embodied in S. 1305 introduced by Senators Packwood and Matsunaga with six co-sponsors. A companion bill has been introduced in the House by Representative Cecil Heftel as H.R. 3072 with 21 co-sponsors. This legislation would operate to reinstate the cogeneration tax credit as well as generally extend the duration of energy tax credits, and selectively increase the amount of those tax credits for certain technologies. The Coalition urges that before markup is formally scheduled on S. 1396 within the Senate Finance Committee that the Committee members have the opportunity to explore through further hearings the comprehensive features and provisions in S. 1305.

Importance of Energy Tax Credits as Financing Tools

S. 1305 and a more comprehensive energy tax credit plan are critical elements of a national energy policy. In order to finance any cogeneration project, a financial institution will consider in its analysis eight specific risk factors with the project:

1. Technical Risk

   - Will the project use a proven or a new technology? The lender obviously prefers to see proven technology in a project.

2. Market Risk

   - What is the likelihood that the project will have an assured market for the output at prices that return a profit when the project is completed?

   - What is the nature of the contracts which govern the sale of the electricity and steam How firm and how long are the contracts?

3. Economic Risk

   - What is the likelihood that the economic projections which forecast amount of production, sales prices, operating costs and earnings generated over the life of a project will hold up over time?

   - What is the degree of latitude or sensitivity among various project assumptions?

4. Financial Risk

   - Will the project be able to generate sufficient earnings to service the debt and to return invested capital to the project sponsors? Minimum annual coverage of 1.5 cash flow to debt service is typically preferred by lenders.

   - What is the percentage of equity invested in the project? Is the amount sufficient to provide a cushion for unexpected contingencies?

5. Supply Risk

   - What is the likelihood that the project managers can obtain a reliable and steady supply of feedstock necessary to ensure the efficient and economical operation of the cogeneration facility?

   - What are the terms of the supply contracts regarding duration and interruptibility?

6. Completion Risk

   - What is the likelihood that the project can be completed without excessive delays and will operate according to minimal standards of performance?

   - Have feasibility studies been performed?

   - What is the reputation of the design engineers, project managers and contractors who have been retained to do the job?

7. Regulatory Risk

   - Has the project satisfied all environmental and regulatory requirements for siting, construction and operation?

   - What is the likelihood that changing legislation could impair the performance of the project?

8. Operating Risk

   - Once the plant is operating, a lender wants to be assured that the project will be managed and operated by experienced, trained personnel.

   - In addition, all necessary insurance for operation of the project should be in place.

The risk involved in an assessment of each of these factors must be evaluated on its own and also in relation to the other risk factors in order to determine the overall risk of the project. A project sponsor wants to structure a deal which minimizes his credit exposure. A lender, on the other hand, wants to be assured that the project has support available to it to provide for debt repayment. Project financing negotiations will attempt to balance these opposing objectives.

The extent to which these relative risks are perceived is a function of the quality and maturity of these technologies and principles of economics. Cogeneration has enjoyed successful experience and currently supplies about 5% of total U.S. electricity production increasing substantially from levels of just 3% in 1970. Yet, many cogeneration projects are perceived by investors and financial institutions as risky requiring a rate of return which can exceed the return available on more conventional investment opportunities. Moreover, the energy marketplace in this country is not a free market for the provision of electricity, natural gas and other fuels. Favorable tax treatment exists in the form of expensing costs of extraction and depletion allowances, while business use of various fuels is an ordinary and necessary business expense deductible in computing federal income taxes. Tax incentives such as the tax credit initiatives in S. 1396 and S. 1305 rectify these imbalances in our economic system, address the perceived risks associated with these technologies by offering a premium incentive for investment in such projects, and offset the tax benefits of expensing usage of fuels by business in general.

Moreover, reduced energy costs have the potential to reduce tax deductions in deriving taxable income with positive feedback effects offsetting revenue losses from the tax credits themselves. Further, the increased economic activity associated with the enhancement of energy efficiency through cogeneration generates additional taxable income with further positive feedback effects. This means that for every dollar of energy use saved by the investment, the Treasury in effect recovers increased tax revenues--revenue which would not have been collected but for the energy saving capital expenditure.

Thus, cogeneration projects are being financed generally with two types of funds: debt and equity (risk capital). The availability of energy tax credits for equity financing becomes critical for three reasons: first, it is self-implementing; second, it is available on a timely basis when the cogeneration system is placed in service, and is valued at close to net present value unlike depreciation allowances; and third, its value to the taxpayer unlike depreciation allowances is constant, and is not contingent upon the marginal tax rate of the particular investor.

The impact of energy tax credits for such technologies as cogeneration proved an important tool in arranging financing for projects, and helped stimulate capabilities to attract risk capital to these projects. However, the full value of such provisions as an incentive and Congressional intent in support of such technologies was ultimately thwarted by:

1) failure of the Internal Revenue Service to properly interpret or meaningfully implement such provisions;
2) continued attacks by this Administration against these tax credits even when they were in existence; and
3) imposition of expiration dates coupled with restrictive IRS interpretations on affirmative commitments which precluded inclusion of the credits in the investment decision-making process in any meaningful manner

With so many unknown and uncertain variables, it is no surprise that underlying challenges regarding the effectiveness of such energy tax credits as a business investment tool have become really self-fulfilling prophecies.

For these reasons, the membership of the Cogeneration Coalition, Inc. strongly urges this Committee to broaden the focus and scope of its deliberation on energy tax credits to consider the comprehensive and more substantial approach raised in S. 1305 in its deliberations on the Energy Security Tax Incentives Act. Only this course will offer a more meaningful, permanent response benefiting these important technologies for long-term planning through this decade to satisfy the electric power supply challenges which our nation is rapidly facing.

We appreciate the opportunity to appear before this Subcommittee, and will be pleased to answer any questions you may have.

- Attachment 1 -

US Energy Consumption in 1980
(quadrillion Btu)

Energy Consumption by Sector

Residential and commercial	16.6
Transportation	18.6
Electric utilities[*]	17.7
Industrial	
Mining, construction, and agriculture	5.2
Manufacturing	20.6
Total	**78.7**

Energy Consumption in Manufacturing Sector

	Purchased Fuels and Electricity	Process Residuals Used for Fuel	Hydrocarbons Used as Raw Materials[**]	Total
Food	2.0	—	—	2.0
Pulp & paper	1.1	1.0	—	2.1
Chemicals	2.9	—	2.3	5.2
Petroleum refining	1.0	2.0	—	3.0
Steel	1.6	1.7	—	3.3
5-industry total	8.6	4.7	2.3	15.6
All other	5.0	—	—	5.0
Total				**20.6**

SOURCES: US Department of Energy, Energy Information Administration, *Monthly Energy Review*, March 1981; US Department of Commerce, *Annual Survey of Manufacturers, Preliminary Report: Fuels and Electricity Consumed (1978)*, December 1980, US Department of Commerce, *Annual Survey of Manufacturers, Energy Consumption and Stocks, Blast Furnaces and Steel Mills*, 1978 and 1979; American Paper Institute, Raw Materials and Energy Division, *US Pulp, Paper and Paperboard Industry Estimated Fuel and Energy Statement Annual, Crude Petroleum Products, and Natural Gas Liquids*, 1979; US Department of Energy, Energy Information Administration, *End Use Energy Consumption Data Base*, Series 1 tables, June 1978; RPA estimates

[*] Net electric utility energy consumption is total energy consumed by electric utilities minus the Btu value of electricity sold to the industrial, residential, commercial, and transporation sectors.

[**] Excluding crude oil input to petroleum refineries.

- Attachment 2 -

SIC	*Potential NW* *(MW)*	*(%)*	*Potential Number of Plants* *Number*	*(%)*
20	7,146	17	863	27
26	8,414	20	454	14
28	9.800	23	408	13
29	10.976	26	179	6
33	2.823	6	307	10
Remaining Sector	3.665	8	920	30
	42.824		3,131	

Size (MW)	*Total MW Production*	*(%)*
< 2	847	2
2-10	6.073	14
10-50	12.433	29
50-100	7,417	17
> 100	16.054	37
	42.824	

SIC Definition

SIC	*Definition*
20	Food
21	Tobacco Products
22	Textile Mill Products
23	Apparel
24	Lumber and Wood Products
25	Furniture and Fixtures
26	Paper
27	Printing and Publications
28	Chemicals
29	Petroleum and Coal Products
30	Rubber and Misc. Plastic Products
31	Leather
32	Stone, Clay and Glass Products
33	Primary Metals
34	Fabricated Metal Products
35	Machinery, Except Electrical
36	Electric and Electronic Equipment
37	Transportation Equipment
38	Instruments and Related Products
39	Miscellaneous Manufacturing

- Attachment 3 -

*Regional Summary of Potential Cogeneration**

Region	*Number of Potential Plants*	*Potential Power Generation* (MW)	*Potential Electricity Generation* (10^6 Kwh)	*Potential Steam Generation* (10^6 1b/yr)	*Potential Energy Savings* (10^9 Btu/Yr)
New England	289	3,014	17,464	98,843	115,386
NY/NJ	265	2,833	19,070	116,035	128,872
Mid-Atlantic	319	4,536	30,183	215,531	206,834
South Atlantic	544	5,757	40,464	396,778	294,648
Mid West	559	5,225	37,874	321,993	251,377
South West	335	11,362	91,714	763,314	631,891
Central	186	2,411	17,895	153,122	119,403
North Central	38	506	4,072	33,817	27,684
West	408	7,708	43,219	216,761	278,744
North West	150	1,316	8,642	64,474	58,830
TOTALS	3,093	44,669	310,593	2,380,634	2,113,620

*Best System At Plant Site Accelerated Depreciation ROI > 7%

- Attachment 4 -

*State Summary of Potential Cogeneration**

State	*Number of Potential Plants*	*Potential Power Generation (MW)*	*Potential Electric Generation (10^6 Kwh/Yr)*	*Potential Steam Generation (10^6 1b/Yr)*	*Potential Energy Savings (10^9 Btu/Yr)*
Alabama	98	1,658	11,669	164.638	91,623
Alaska	3	2	12	449	121
Arizona	24	110	724	11,852	6,184
Arkansas	39	1,120	6,934	83,557	53,461
California	382	8,537	49,732	239,307	318,376
Colorado	17	235	1,781	9,897	11.321
Connecticut	47	370	2,416	12,470	16,154
Delaware	15	426	3,538	16,695	22,835
Dist. of Col.	0	0	0	0	0
Florida	77	1,917	11,978	116,212	88.235
Georgia	113	1,318	9,557	162,086	81.804
Hawaii	15	252	990	6.060	6.557
Idaho	20	430	2,953	10,776	18.424
Illinois	181	2,452	18,792	133.201	111.819
Indiana	61	1,595	13,011	104,173	75.784
Iowa	51	451	2,912	38.936	23.256
Kansas	29	976	8,007	43.220	50.358
Kentucky	41	638	4,934	51,514	30.882
Louisiana	94	6,202	52,148	433,444	352.404
Maine	63	1,678	12,098	77,380	81.028
Maryland	18	274	2,079	19.871	12,138
Massachusetts	134	1,168	6,327	27,875	39.609
Michigan	121	1,345	9,970	112,089	70.283
Minnesota	42	456	3,095	34,342	20,571
Mississippi	51	1,580	12,315	73,164	82,800
Missouri	53	506	3,530	29,428	24,752
Montana	10	211	1.545	8,739	9,799
Nebraska	20	85	452	7,457	3,777
Nevada	2	2	6	85	49
New Hampshire	26	296	1,658	11.897	11.387
New Jersey	125	2,323	16,515	83.110	108.368
New Mexico	20	119	656	10.511	5.533
New York	156	1,304	8.297	66.229	58.460
North Carolina	121	1,030	7,397	91,106	57.427
North Dakota	1	1	3	46	23
Ohio	156	2,280	16,043	126.894	108.236
Oklahoma	28	668	5,119	54,366	37.366
Oregon	81	647	4.333	46,987	32.719
Pennsylvania	214	4,172	28,637	169.685	183,333
Rhode Island	24	280	1,358	4.894	7,715
South Carolina	82	757	5,718	85 074	46.918
South Dakota	3	2	5	94	45
Tennessee	47	1,694	14,051	63.356	89.938
Texas	186	5,878	48.502	603,618	352.682
Utah	7	145	1.261	10.210	8.342
Vermont	13	103	500	2.680	3.360
Virginia	82	1,359	7,733	103.885	61.612
Washington	51	813	5.483	37,472	36.240
West Virginia	19	361	2.970	42.059	21.162
Wisconsin	72	642	4.348	64.644	36.115
Wyoming	6	95	796	13.816	6.872
TOTALS	3.093	44.669	310.593	2.380.634	2.113.620

*Best System at Plant Site Accelerated Depreciation ROI > 7%

STATEMENT OF JOEL A. WEISS, MANAGER, WASHINGTON OPERATIONS, ACUREX CORP., ON BEHALF OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION, WASHINGTON, D.C.

Mr. WEISS. Mr. Chairman, my name is Joel Weiss, and I am manager of Washington operations for the Acurex Corp. I am here today in my capacity as chairman of the Government Affairs Committee of the Solar Energy Industries Association. I am accompanied to day by Mr. Alan Howe, director of government relations for SEIA. I appreciate the opportunity to appear this morning before the committee to provide the views of the association on the proposed legislation.

Before discussing the bill in detail, I would like to thank Senator Domenici and the other sponsors of the legislation for their recognition of the fact that the existing investment tax credits for renewable energy are inadequate for commercialization of these technologies.

By introducing this bill, they have acknowledged the shortcomings of the existing credit expiration date of December 31, 1985.

We also agree with Senator Domenici's comment that making improvements to energy tax credits is a time-critical issue.

Unfortunately, despite our appreciation of its basic intent, we in SEIA do not believe that the proposed legislation goes far enough in correcting the deficiencies of the existing renewable energy statutes. In order to fully appreciate why we feel this way, it is necessary to understand the background of the renewable energy credits.

The first credits for renewable energy were established in 1978 as part of the National Energy Act. These credits were expanded and extended in 1980 with the passage of the Windfall Profits Tax Act.

As Mr. Zimmer has mentioned, the stated purpose of the credits, it should be noted, was to offset inequities in the Tax Code which favor fuel consuming over fuel-free technologies. These inequities today, in an era of high interest rates and constrained investment capital, are among the most significant factors in inhibiting the commercialization of renewable energy.

In 1980, an attempt was made to increase the credit levels to 30 percent for renewable energy. Unfortunately, just before passage, this was changed to 15 percent, and the termination date of the credits was moved from 1990 to 1985

It is now apparent that it was extremely optimistic to expect that technologies which were heavily in the R&D phase in the late seventies and early eighties could successfully be commercialized with tax credits which expire in 1985. Although this optimistic assumption might once have been achievable, three key events in the past several years have made this goal of full commercialization by 1985 virtually unobtainable. These events were of course the so-called oil glut with its accompanying reduced fossil energy prices; the severe reductions in Federal R&D expenditures for solar energy, which have delayed development schedules for many technologies; and, lastly, the passage of TEFRA in 1982, the basis provision of which substantially eroded the value of existing tax credits.

For these reasons it is now fairly clear that by the end of 1985 when the renewable energy credits expire, the solar energy industry will not be sufficiently self-sustaining to permit it to aggressively market its products and continue the commercialization of these technologies at the pace which we all desire.

The intent of S. 1396 is to remedy this situation by providing an affirmative commitment extension of the business energy credit through the end of 1992.

At first examination it might appear that this quasi-extension would provide the extra years which the industry needs for its commercialization efforts. Unfortunately, this is not the case. S. 1396 does not raise the level of the business credit. Therefore, it is silent on one of two key issues of the industry. But, just as important is the fact that S. 1396 does not provide an adequate extension of these credits for even those technologies which might qualify.

Some may question this assertion because there is support for S. 1396 from some members of the renewable energy industry. However, on examination of the positions of those firms who support the proposal, one finds that it is anticipated that the legislation will only permit the construction of a very small number of projects which are already being planned and which can meet the affirmative commitment requirements at the end of 1985.

It is the industry position that this affirmative commitment extension will not result in the commercialization of solar energy technologies, rather it may permit the construction of a few isolated projects.

Furthermore, since it does not address extension of residential solar energy tax credits, it will not encourage further commercialization of these technologies.

Rather than the limited benefit which would accrue from S. 1396, we in SEIA also urge the subcommittee to examine the provisions of S. 1305. That bill addresses the continuing need for the effective incentive provided by the tax credits. It asks for the business energy tax credits to be increased to 25 percent and extended through 1990, with a corresponding extension of the existing residential tax credits.

We in SEIA believe that the wisest course of action today is for the Government to insure that the taxpayer get a return on his investment in solar energy. The best way to achieve that goal is to give full consideration to the merits of S. 1305.

We thank the chairman for his time today.

Senator WALLOP. Thank you, Mr. Weiss.

[The prepared statement of Joel A. Weiss follows:]

Statement
of
Joel A. Weiss
Chairman, Government Affairs Committee
Solar Energy Industries Association
Manager, Washington Operations
Acurex Corporation
Before the Subcommittee on Energy and Agricultural Taxation
Committee on Finance U.S. Senate
June 17, 1983

Mr. Chairman, members of the Committee, my name is Joel Weiss and I am Chairman of the Government Affairs Committee of the Solar Energy Industries Association. I appreciate the opportunity to appear this morning before the Committee to provide the views of the Association on the proposed legislation, S.1396.

Before discussing the bill in detail I would like to thank Senator Domenici and the other sponsors of the legislation for their recognition of the fact that the existing Investment Tax Credits for renewable energy are inadequate for commercialization of these technologies. By introducing this measure they have acknowledged the shortcomings of the existing credit expiration date of December 31, 1985. I would also like to thank the Committee for holding this hearing so that issues relating to energy tax credits can be addressed.

Unfortunately, despite our appreciation of its basic intent, we in SEIA do not believe that the proposed legislation goes far enough in correcting the deficiencies of the existing renewable energy statutes. In order to fully appreciate why we feel this way, it is necessary to understand the background of the renewable energy credits and of the Federal Solar Energy program.

In reaction to the oil supply disruption of the early 70's, the Congress recognized the nation's need for alternative energy sources and established a federal solar energy program. In 1978 the first renewable energy tax credits were established as part of the National Energy Act. These credits were expanded and extended in 1980 with the passage of the Windfall Profits Tax Act.

A stated purpose of the credits, it should be noted, was to offset inequities in the tax code which favor fuel consuming technologies relative to those which are fuel free. These inequities, which result from the expensing of conventional fuel in the year of use, are among the most significant factors inhibiting the commercialization of renewable energy in a time of high interest rates and constrained investment capital. This was recognized in 1980 when an effort was made to increase the Business Energy Investment Credit for renewable energy to 30 percent. Unfortunately this proposed increase was changed to 15 percent just before final passage as was the expiration date which was advanced from 1990 to 1985.

It is now apparent that it was extremely optimistic to expect that technologies which were heavily in the R&D phase in the late 70's and early 80's could successfully be commercialized with tax credits which expire in 1985. Although this optimistic assumption might once have been achievable, three key events in the past several years have made this goal of full commercialization by 1985 virtually unobtainable. These events were:

1. The so-called 'oil glut' which has been accompanied by falling fossil fuel prices,

2. The severe reductions in federal R&D expenditures for solar energy, which have delayed development schedules for many technologies,

3. Passage of the Tax Equity and Fiscal Responsibility Act of 1982, the Basis Adjustment provision of which substantially eroded the value of existing tax credits.

For these reasons it is now fairly clear that by the end of 1985 when the renewable energy credits expire, the solar energy industry will not be sufficiently self-sustaining to permit it to aggressively market its products and continue the commercialization of these technologies at the pace which all of us desire.

The intent of S.1396 is to remedy this situation by providing what is known as an affirmative commitment extension of the business energy credits through the end of 1992. At first examination it might appear that this quasi-extension would provide the extra years which the industry needs for its commercialization efforts.

Unfortunately, this is not the case. S.1396 does not, of course, raise the level of the business credit. Therefore, it is silent on one of two issues of key importance to the solar energy industry. However, just as important is the fact that S.1396 does not provide an adequate extension of the credits even for those technologies which might find niche markets at the existing 15 percent credit level.

Now some may question this assertion because there is support for S.1396 from some members of the renewable energy industry. However, on examination of the positions of those firms who support the proposal, one finds that it is anticipated that the legislation will only permit the construction of a very small number of projects which are already being planned and which can meet the affirmative commitment requirements at the end of 1985.

The actual usefulness of the legislation to a specific firm or to a specific technology will depend heavily on the commercial readiness of that technology at the end of 1985. Even for those fortunate enough to attempt to use these provisions to construct one or two projects the question arises as to how projects beyond these will be financed. At the 15 percent credit level it is likely that any projects which can be financed will be economically marginal and that the marketplace will not provide sufficient stimulus for additional projects to be constructed after the expiration of the credits. I also believe that there is also a very significant possibility that one or more of the projects now believed to be viable under this affirmative commitments provision will find itself unable to be financed either because of insufficient credit levels or because of inability to qualify for affirmative commitments.

It is the industry position that this affirmative commitment extension will not result in the commercialization of solar energy technologies, rather it may permit construction of a few isolated projects. Furthermore, since it does not address extension of residential solar energy tax credits, it will not encourage further commercialization of these technology applications.

At this point some people may question whether commercialization of renewable energy technologies is attainable at all; they might even go so far as to think that failure to achieve commercialization by 1985 means that the Federal solar energy program has been a failure.

NOTHING COULD BE FURTHER FROM THE TRUTH.

Those of us in the industry are confident that the performance of our products and their costs meet or even exceed the ambitious goals of the federal solar program in the 70's. We believe we have made great progress in commercializing technologies which are technologically still in their infancy; progress which is virtually unprecedented when compared with the development and commercialization time schedules of almost any other 20th century products.

No, the record of the solar program is not one of failure; it is one of almost unparalleled success. But success does not mean that the job is over either.

What we have established now is an infant industry, and even more importantly an infant marketing and commercialization process. The products are now largely developed but the hardest part is still underway. Today a businessman is not shocked to hear one of us say that we propose to produce energy for his factory from the sun. He no longer looks at us as if we had stepped out of a flying saucer. However, despite his not being shocked he is still surprised, perplexed and somewhat uncomfortable with this new form of energy. The commercialization process is a slow one; at this stage of the process it is fragile, and highly perishable. Events like the downturn in oil prices can cause major traumas in business plans for young companies operating very close to the margin.

Rather than the limited benefit which would accrue from S.1396, we in SEIA urge the Subcommittee to examine the provisions of S.1305, sponsored by Senators Packwood, Matsunaga, Durenberger, Moynihan, Chafee, Baucus and Mitchell, of the Finance Committee, and other Senators as well. That bill addresses the continuing need for the effective incentive provided by the tax credits. It asks for the business energy tax credits to be increased to 25 percent and extended through 1990 and an extension to the same date for the present residential tax credits. The 10 percent investment tax credit is also made applicable to solar heating and cooling, whereas now, it is limited to process heat applications. An affirmative commitment period would follow for five years, with appropriate qualifying language.

While the provisions of S.1396 would be helpful for a few qualifying projects to receive tax credits beyond 1985, the greater need in the industry can be better served by a little larger treatment as in S.1305.

An analysis of energy tax credits recently completed by Booz-Allen and Hamilton for the Solar Energy Industries Association indicates that with increased tax credits renewable energy could displace over 30 million barrels of oil annually by 1990; that is about a fifth of a quad. The significance of this is that a fifth of a quad would represent approximately a $10 billion solar energy industry, one which would be a credit to the federal program, to the Congress and to the industry itself. A $10 billion industry by 1990 would represent a twenty-fold increase over the solar energy industry of today.

We in SEIA believe that the wisest course of action today is for the government to ensure that the taxpayer gets a return on his investment in solar energy by ensuring that these projections of a prosperous solar industry become reality. The best way to achieve that goal is to support a true extension of the renewable energy tax credits as embodied in S.1305.

I thank the Committee for its consideration of improvements to the renewable energy tax credits and for the opportunity present the views cf the industry on porposed legislation. This completes my prepared remarks. I would be pleased to answer any questions you may have.

STATEMENT OF ROBERT L. ROACH, WASHINGTON REPRESENTATIVE, ENVIRONMENTAL POLICY CENTER, WASHINGTON, D.C.

Mr. ROACH. Good morning, Mr. Chairman.

My comments focus on those portions of S. 1396 which address synthetic fuel tax credits.

The Environmental Policy Center believes that additional subsidies for the rapid commercialization of synthetic fuels are unneeded and would be counterproductive to efforts to design a reliable and cost-effective energy policy for the Nation.

The two barriers which continue to plague the industry are the uncertainties of the technologies and the world price of oil. Tax policies will not substantially alter the market, nor are they the most effective way to spur needed improvements in the technologies. An attempt to use tax credits to remedy these problems will only create enormous derains on the Treasury.

It is important to realize that synthetic fuels are already one of the most heavily subsidized energy sources in the country. Generous tax credits are already available to the industry. Most significantly, the Synthetic Fuels Corporation still has $14.8 billion to make available to synthetic fuel projects, and it has developed lucrative assistance packages for these projects. However, despite all of this assistance, the industry has yet to get off the ground.

The SFC has been unable to fund even one project to date, much less stimulate the development of a viable industry.

During the last year and a half, a large number of projects which were considered front-runners for SFC assistance have been terminated, and the demise of these projects took place despite the availability of many of the synfuel tax credits included in S. 1396. One must seriously ask if these subsidies will be more effective the second time around.

The key point is that there is a substantial difference between policies designed to improve and develop synfuel technologies, and policies designed to protect the interest involved in synthetic fuels commercialization. In the past few years, Government policy has almost exclusively focused on the latter.

The Great Plains coal gasification project perhaps best typifies the results of this situation. The project enjoys a $2 billion Federal loan guarantee and a special pricing formula which will allow it to sell its products at above-market prices. The sponsors of the project have also already realized substantial paybacks of the investments as a result of tax benefits. Three of the five partners in the venture have received a total of $61.6 million in tax credits alone on investments of only $192.1 million.

Yet, today project sponsors are petitioning the Federal Government for additional subsidies to offset losses which could reach $1.7 billion during the first 10 years of operation. These measures would only shield synfuel ventures from the realities of the market and create greater deficits. They will not provide long-term stability to projects or viability to the industry.

As an example of how extensive this subsidization is, I would like to refer to a very frank and revealing address delivered recently by Mr. E. Reece Davis, president of finance and accounting for Paraho Development Corp. According to Mr. Davis, just by employing the energy tax credit along with the SFC subsidies and the tax benefits already available, and I quote:

> It is possible for a 25 percent investment in an oil shale plant to be completely paid out or recovered before the end of the construction period for the entire plant.

This situation would obviously be even more lucrative if other credits proposed in S. 1396 become available. But even Mr. Davis notes these benefits will not significantly affect the major problems plaguing the industry. Again I quote:

> "Well, fine; I get payout of my investment before I complete construction, and the whole thing goes to pieces in a handbasket because I can't operate a profit." That's the guts of it from a financial standpoint.

In other words, Mr. Chairman, tax subsidies and SFC assistance will protect a company's investment and will even be able to provide a rate of return during the life of the price guarantee. However, they aren't the most effective way to improve the viability of the industry, nor will they provide any real energy security.

As we have seen again and again with numerous Federal programs, simply throwing money at a problem will not solve it. Yet, this continues to be the preferred solution to the problems of the synthetic fuels industry.

If the Government is really interested in developing a viable industry, then Government policy should focus on that through research and development.

A more appropriate strategy would be a modest, evenly paced research and development program which requires equitable cost-sharing on the part of the private sector and provides for the collection of data on technical performance, environmental impacts, and economic feasibility.

For the sake of a rational and equitable energy policy, EPC urges this subcommittee to reject any attempts to provide additional tax subsidies for the commercialization of synthetic fuels.

Thank you.

Senator **Wallop**. Thank you, Mr. Roach.

[The prepared statement of Robert L. Roach follows:]

ENVIRONMENTAL POLICY CENTER
317 Pennsylvania Ave., S.E., Washington, D.C. 20003
202/547-5330

Statement of Robert L. Roach
Washington Representative
June 17, 1983

Good morning Mr. Chairman. My name is Robert L. Roach. I am a Washington representative of the Environmental Policy Center and Director of its Synthetic Fuels Assessment Project. Since the early 1970's, the Center has been actively involved in the debates over the proper federal role in the development of synthetic fuels. Since the enactment of the Energy Security Act of 1980 (ESA), EPC has closely monitored the activities of the Synthetic Fuels Corporation (SFC) and has assessed many of the projects which have applied for SFC financial assistance. Our organization has repeatedly voiced concern about the advisability and effectiveness of earmarking billions of federal dollars to underwrite a crash synthetic fuels commercialization program. It is with this perspective that I appear here today to testify on S. 1396, the Energy Security Tax Incentives Act of 1983. My testimony focuses on those portions of the bill which relate to synthetic fuels, and your request to provide comments on what additional measures should be considered by the Committee in order to provide useful tools for the development of synthetic fuels technologies.

The Environmental Policy Center believes that additional subsidies for the rapid commercialization of synthetic fuels are unneeded, inequitable and would be counter-productive to efforts to design a reliable, cost-effective and environmentally sound energy policy for the nation. The two barriers which continue to plague the industry are uncertainties of the technologies and the world price of oil. Tax policies will not improve the market, nor are they the most effective way to secure needed improvements in the technologies. To attempt to use tax credits to remedy these problems will only create enormous drains on the Treasury.

Synthetic Fuels Already Enjoy Some of the Largest Subsidies Available to any Energy Strategy

In considering the need for the incentives provided in S. 1396, it is important to review the subsidies presently available to the synfuels industry. Synthetic fuels are already one of the most heavily subsidized energy sources in the country. Billions have been spent on synfuels research and development by the Department of Energy and its predecessors. The Energy Security Act authorized $17.7 billion for the rapid development of a commercial industry. The Synthetic Fuels Corporation may provide up to three billion dollars in assistance to a single synfuels project through price guarantees, and loans and loan guarantees which may subsidize up to 75% of the project costs. Today, the Synthetic Fuels Corporation still has $14.8 billion which it plans to make available to synthetic fuels projects. According to SFC officials, these funds will be employed to guarantee project sponsors very lucrative returns on investments. SFC President Victor Schroeder stated that "The median rate of return on equity projected by the sponsor companies [requesting SFC assistance] is 30 percent to 35 percent after tax."[1] Financial packages designed by the SFC offer exorbitant price guarantees of up to $67 per barrel for oil shale projects, $11.55 MCF for high btu gas and a guarantee of $1.05 per gallon for methanol from peat.

In addition, generous tax deductions and credits already exist for the synfuels industry. These include the deduction of 85% of mine development costs for oil shale facilities, deductions of property taxes and interest payments on qualifying properties during construction, and the regular investment tax credit. These subsidies allow project sponsors to begin recovering investment costs almost immediately upon commencement of construction.

There are even some very creative approaches attempted by project sponsors to increase tax credits and stretch out SFC subsidies. The First Colony Peat-to-Methanol Project in Creswell, North Carolina was the first project to sign a "Letter of Intent" with the SFC, and may be the first to receive financial assistance. The SFC has negotiated a marketing strategy with First Colony which will allow a portion of the 50 cent/gallon Alcohol Fuels Tax Credit (AFTC) - normally a credit only available to blenders or distributors of biomass-based alcohol used as motor fuel - to be shared with the project sponsors. By "passing through" a portion of the AFTC, the life of the SFC price supports will be extended, and the project will benefit from an estimated additional $77 million in federal subsidies. Added to the $465 million in SFC assistance, the venture will enjoy some $542 million in federal aid for a project with total estimated costs of $576 million. These figures do not even account for the more traditional tax credits for which the project will qualify and the sponsors will benefit.

Despite all of the billions of federal dollars available, the industry has yet to get off the ground. The SFC has been unable to fund even one project to date, those about to commence operation will require large federal subsidies, and SFC officials have already admitted that the 1987 goal of 500,000 bpd capacity mandated by the ESA will not be met. In fact, SFC Executive Vice President Jimmie Bowden recently stated that the amount of financial authority that would be required by the SFC to achieve the ESA's goal of 2 million bpd by 1992 "would exceed $150 billion."[2] Yet again and again proposals are offered to provide more subsidies to this moribund industry. In a time of such severe budgetary constraints, it is essential that the value and impact of such additional subsidies be carefully scrutinized.

The Current Status of the Synfuels Industry Does Not Make it a Promising Energy Alternative Nor Does It Justify Additional Subsidies

Hailed by proponents as the answer to America's energy problems, synthetic fuels technologies have failed to live up to such expectations. Actions of the synthetic fuels industry itself indicate that these technologies are not a viable energy option at this time:

In October 1982, Amoco Production Company's President Leland Adams stated that "oil prices would have to rise substantially before the development costs of synthetic fuels are justified." He cited prices of $60-$90 per barrel for oil shale, $80 per barrel for direct liquefaction products and $90 per barrel for products from indirect liquefaction. With respect to oil shale, he noted that the economics had forced Amoco "back to the laboratory to try to produce (the fuel) more economically."

In March 1983, Jan Mares, Assistant Secretary for Fossil Energy at the Department of Energy, remarked that the likelihood that coal liquefaction technologies can be competitive by the end of the century is "... more remote today than it was two years ago."

The demise of several synfuels project frontrunners over the past year is a clear indication of the gap that exists between present technologies and commercial viability:

March 1982--The Wycoal Gas Project in Douglass, Wyoming, on the drawing board since 1974, withdrew its proposal from SFC consideration. Of primary concern to the sponsors was the projected requirement of a synthetic natural gas sales price of roughly $17 mm/Btu as compared with an AGA estimated 1982 average price of $4.55 mm/Btu.

May 1982--Exxon closed down the Colony Oil Shale Project in Parachute, Colorado, in which TOSCO (recipient of a $1.2 billion federal loan guarantee) was a 40% partner. The Project, well under construction, was highly touted as the most ambitious attempt at oil shale commercialization. When Exxon finally invested the money necessary to finalize design engineering, the project's price tag ($5-6 billion) became economically prohibitive.

October 1982--The Hampshire Energy Project, a 20,000 bpd coal-to-gasoline project near Gillete, Wyoming, was financially crippled by the withdrawal of SOHIO--the major equity parnter. SOHIO claimed its decision to withdraw from the venture was, "an economic decision. It does not seem that the return on investment is sufficient for the time and expense that we would have to put on it."

November 1982--The 25,000 bpd Breckinridge coal liquefaction project in Addison, Kentucky, lost Ashland as its primary equity sponsor. Among the reasons Ashland listed for pulling out of the project were the cost--"more than $3 billion"--and the potential for massive cost overruns.

February 1983--Design work was suspended on the New England Energy Park in Fall River, Massachusetts, a front-runner for assistance in the SFC's third solicitation, when project sponsors were unable to find customers for the electricity generated by the 5000 ton per day combined cycle coal gasification plant. A project representative noted that "the utilities just aren't interested in our output." In May, 1983, the sponsors terminated the project.

Ominous similarities exist between these developments. In each instance, despite the promise of billions of dollars in federal subsidies, companies made the decision to abandon or halt the projects due to economic and market factors.

It is important to realize that the demise of these projects took place despite the availability of many of the synfuels tax credits being discussed by this subcommittee today and the presence of the credits recently abolished by the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA).

One must ask if the subsidies proposed in S. 1396 will be any more effective the second time around. Synfuels projects have already had five years to qualify for the Business Energy Tax Credit (BETC). It was not necessary to build the plant to be eligible. Yet the combination of generous tax subsidies and billions in SFC assistance failed to stimulate the development of new or improved projects:

> Five of the six second round finalists for SFC assistance are projects which had been rejected in the first round.
>
> Only 7 of the 17 projects which remain as candidates for assistance in the SFC's third round of awards are new projects. Indeed, some projects which applied for third

> round assistance are actually weaker than when they had applied in earlier rounds.
>
> A solicitation for proposals to construct a western oil shale project generated only six responses. Three of the proposals had already applied under the SFC's third solcitation, and two other projects identified no site or resource base. In June 1983, only one project remained as a candidate in the "competitive" solicitation.

Perhaps even more disturbing is the status of the three projects which have collected over $3.6 billion in Energy Security Reserve assistance while simultaneously benefiting from the energy tax credit and provisions of the Economic Recovery Tax Act of 1981. The Colony Oil Shale Project was cancelled when construction costs nearly doubled. Sponsors of the Great Plains Coal Gasification project reported in April, 1983, that despite a special pricing formula which will allow the project to sell its product at approximately $6.25 MCF, the venture will lose $773 million over it's first 10 years of operation, even if oil prices increase 5% per year above inflation. Losses could total $1.7 billion if oil prices increase at less than 5% per year. Although the project has already obtained a $2.02 billion federal loan guarantee, federal authorities and project sponsors are searching for ways to provide additional subsidies to the venture to cover the projected losses and prevent default on the guaranteed loans. According to a study performed by the Congressional Research Service (CRS) in February, 1983, federal subsidies to the Union Oil Shale Project will total between $256 million and $400 million (with a mid-range estimate of $342 million) during the years 1984 through 1989. The project was granted $400 million in price supports in 1981.

It is important to stress again that these are the projects which received many of the synthetic fuels tax benefits which are contained in S. 1396. This indicates that even additional subsidies will fail to create a viable industry.

Additional Tax Subsidies Will Not Correct the Fundamental Problems of the Synfuels Industry

Advocates of a rapid commercialization program may cite these failures as an indication of the need for additional subsidies to this industry. I submit the situation is quite the opposite. This industry has enjoyed some of the most generous subsidies ever given to any energy technology, yet still is far from being viable. The current status of the industry suggests that additional subsidies for commercialization are not the most efficient way to solve the fundamental problems of the industry.

The purpose of tax policy is not to bail out dying or unpromising industries. Rather, it is to steer the flow of capital into the most efficient, promising areas of development. The track record of the synfuels industry, as I have discussed, indicates that it is not such a promising area. Indeed, many of the supporters of increased subsidies for this industry argue that it can not make it on its own, and that there is no guarantee that it ever will. Recently, Michael Koleda of the National Council on Synfuels Production stated that synfuels development is a "high risk roll of the dice at the national level."[3] This, of course, directly contradicts the claims and assertions which initiated the massive federal subsidization of synfuels in 1979. At that time, policy-makers and industry representatives were echoing statements similar to that made by House Majority Leader Jim Wright during the debate on H.R. 3930 in June, 1979:

> ...let me just say this: I feel quite confident that we can achieve a production goal of 2 million barrels a day in 10 years as easily as we can achieve 500,000 barrels a day in 5 years, or more easily.
>
> I also feel very confident that it really is not going to cost us anything to do so because the rapid rate at which world oil prices are escalating, I am certain, will cause the crude price to reach and exceed the price for which we can produce the synthetic fuels by the time we have it on line, 4 or 5 years from now. In that case, the entire program would not cost us anything.

We now know that present-day realities offer a much different outlook for the real costs of this program. In this respect it is very unlikely that additional tax subsidies will ever stimulate the type of massive, long-term investments required by the industry, much less make it viable.

Over the years, analyses have shown that, historically, tax credits generally result in more revenue being lost by the government than is invested by industry. The figures in Table I show how many dollars worth of new investment is generated for every dollar's worth of revenue lost through use of the investment tax credit.

The estimates indicate values of less than one dollar of investment for every dollar of revenue lost. Many other estimates are lower. This is due, in part to the fact that the credit is given not just to the new investments stimulated, but to all qualifying investments, which include those already planned. In some cases, the credit does provide up-front cash flow which facilitates an investment with very large social, or external returns. This is not the case with synfuels ventures, however.

TABLE I

EFFECTIVENESS OF THE INVESTMENT TAX CREDIT:
INVESTMENT STIMULATED PER DOLLAR OF TAX REVENUE LOST

STUDY REFERENCE	DOLLAR OF INVESTMENT PER DOLLAR OF REVENUE LOSS
A.	$.68
B.	$.56

Sources:

A. Andrew F. Brimmer and Allen Sinai, "The Effects of Tax Policy on Capital Formation, Corporate Liquidity and the Availablity of Investable Funds: A Simulation Study", Journal of Finance, May 1976, pp. 287-308.

B. Allen Sinai and Otto Eckstein, "Tax Policy and Business Fixed Investment Revisited", Data Resources, Inc., Series No. 83, December 1981, McGraw Hill. The ratio used applies to equipment investment. Ratios for plant investment and business fixed investment are lower, ranging from $.18 to $.44.

If these trends are true in a generic sense, it is fairly safe to assume that the descrepancy would be even greater in an investment area as unpromising as synthetic fuels. Indeed, the interest in synthetic fuels seemed to decline during the period of greatest tax advantages. The SFC's first general solicitation for assistance requests opened on May 20, 1980 and closed on March 31, 1981. Projects applying at that time were in a position to benefit from the Business Energy Tax Credit. Sixty-six projects applied, and none received financial assistance in that round.

The SFC's second solicitation, which opened on December 11, 1981 and closed on June 1, 1982 took place when the massive corporate tax reductions contained in the Economic Recovery Tax Act of 1981 were in place. Yet, only thirty-seven projects applied.

The third SFC solicitation which opened on August 19, 1982 and closed January 10, 1983, drew forty-seven applicants.

Given the status of this industry, it would be more effective to directly expend federal money on a modest, evenly-paced research and development program to improve the technologies, rather than squander tax revenues on commercial-scale projects which may be forever dependent upon billions of dollars in federal subsidies.

Ironically, the combination of existing federal subsidies and additional tax credits may actually be counter-productive to the nation's energy program as a whole. The distortion of true energy costs and returns on investments through direct subisidies and extensive tax credits may discourage investments in the development of cheaper, more efficient energy alternatives.

Additionally, in some instances the synthetic fuels projects supported by large federal subsidies are displacing, not supplementing, existing domestic production and refining operations. A marketing strategy produced by the sponsors of the Hampshire Coal-to-Gasoline Project proposed for Wyoming planned to employ federal price guarantees to compete with, and seize markets from, existing local refineries. Representatives of Wyoming and Colorado refineries predicted that development of the Hampshire Project would force the closure of some regional facilities refining domestically produced crude.

Tax policies are not the most effective means of solving the major problems facing this industry - namely market and technical uncertainties. Such an approach is an inefficient use of funds, which will only create large deficits. Indeed, a glimpse of the potential financial drain can be seen with the Great Plains Coal Gasification Project. This is probably the closest example we have of a project operating under the "best case" scenario - on time and under budget. Additionally, as detailed earlier, it enjoys a federal loan guarantee and a pricing formula resulting in an above market rate for its product. Sponsors of the project have already realized substantial paybacks of investments as a result of tax breaks (including the Business Energy Tax Credit). Information obtained on three of the five Great Plains partners reveals that they have received a total of $61.6 million in tax credits alone on investments of only $192.1 million. The amounts of paybacks realized through eligible deductions resulting from accrual of construction period interest and property taxes and other items would further increase the payback to the companies and increase the tax revenue drain on the Treasury.

TABLE II

COMPANY	TOTAL INVESTMENT AS OF 3/31/83	TOTAL TAX CREDITS
Transco	63.5 million	$22.2 million
ANR	91.6 million	$33.4 million
Pacific Lighting	37.0 million	$ 6.0 million

Source: Form 10 Q filed by each company with U.S. Securities and Exchange Commission for quarter ending 3/31/83.

Yet, today project sponsors are petitioning the federal government for additional subsidies to offset operating losses which could approach $1.773 billion during the first ten years of operation. Obviously it would require tax subsidies far in excess of the benefits proposed in S. 1396 to offset such losses. More importantly, these subsidies would still only be bailouts - they would not rectify the chronic problems which plague this venture and other synfuels projects.

This example, of course, begs the final question which must be asked about the synfuels tax credit proposals contained in S. 1396: Who benefits? Clearly, it is not the American taxpayer. The nation's energy security position is not improved, nor is the viability of the synthetic fuels industry. Only a small group will benefit from this program - the corporations which are unwilling to risk their own money on these ventures, but are encouraging the federal government and the taxpayer to bear all of the risks and the costs.

As an example of how totally subsidized these ventures will be with the synfuels tax credits proposed in S. 1396, I would like to refer to a very frank and revealing address delivered this past May to a conference on forecasting the future of oil shale by E. Reece Davis, President of Finance and Accounting for Paraho Development Corporation. According to Mr. Davis, under certain conditions and employing only existing tax benefits and the BETC, "it is possible for a 25% investment in an oil shale plant to be completely paid out or recovered before the end of the construction period for the entire plant." Davis elaborated on the subject by saying:

> ...For purposes of an example only, and not to identify with any particular project, let's assume that we want to examine the after-tax net investment of a multiple retort oil shale facility capable of producing about 50,000 barrels a day. Let's also assume that we start detailed engineering in 1983 and set the project schedule such that a single retort is completed first, operated for a reasonable period of time to demonstrate the commercial viability of a technology, shake down the plant, and learn all we can about that technology, and then followed by the remainder of the retorting complex being constructed to achieve the economies of scale and additional production levels desired.
>
> Further assume that we introduce debt leveraging for the project at a ratio of 3 to 1. This means that we have 75% debt in the project and 25% equity. Lastly, assume that the production from the first retort is covered by some sort of price protection subsidy such that a desired rate of return to the investors is maintained for that first unit for a specified period of time.
>
> Given these assumptions, as well as others regarding the viability of the technology, etcetera, it is possible for a 25% investment in an oil shale plant to be completely paid

out or recovered before the end of the construction period for the entire plant.

If tax subsidies are further increased by expanding the definition of equipment which qualifies for tax credits, as proposed in S. 1396, or by reinstating some of the benefits eliminated by TEFRA, the liklihood only increases that private risk is totally eliminated.

It is important to re-emphasize that even lucrative subsidies such as these will not significantly affect the major problems plaguing the industry. In his address, Mr. Davis confirmed this:

> So you can say, "Well, fine, I get payout of my investment before I complete construction, and the whole thing goes to pieces in a handbasket because I can't operate a profit." That's the guts of it from a financial standpoint.

In other words, tax subsidies and SFC subsidies will protect a company's investment, and will even be able to guarantee a rate of return during the period of the price guarantee. However, these measures will only shield synfuels ventures from the realities of the market and will not provide long-term stability to projects, or viability for the industry. At some point, Mr. Chairman, the costs of a program become so great that it can no longer be justified. This is the case with the federal synthetic fuels commercialization program.

Conclusion

It is never wise to commit a significant portion of the nation's energy budget to the rapid commercialization of immature and uneconomic technologies. During the current fiscal crisis, it is sheer recklessness to do so .

As we have seen again and again with numerous federal programs, simply throwing money at a problem will not solve it. Yet, this continues to be the preferred solution to the problems of the synthetic fuels industry, even though the projects about to commence operation have demonstrated that the the sources of the industry's problems can not be bought off. Providing additional subsidies to the synthetic fuels industry will produce extra profits for private companies, and will produce increased federal deficits. However, they will not provide a cure-all for the industry, nor will they provide the nation with any real energy security.

A more appropriate strategy for the development of a viable synthetic fuels industry would be the establishment of a modest, evenly-paced research and development program which requires cost-sharing on the part of the private sector, and provides for the collection of data on technical performance, environmental impacts and economic feasibility. Such an approach eliminates the environmental and economic uncertainties which plague the current program, but still facilitates the accumulation of a data base and the refinement of technologies which will allow them private sector to establish a commercial industry when the economics are favorable.

In conclusion, I would like to refer to a statement made by President Franklin D. Roosevelt in his Second Inaugural Address which is particularly relevant to the issues addressed in my testimony. He stated:

> We have always known that heedless self-interest was bad morals; we know now that it is bad economics.

Mr. Chairman, it is also bad energy policy. For the sake of a rational and equitable energy policy, EPC urges this Subcommittee to reject any attempts to provide additional tax subsidies for the commercialization of synthetic fuels.

ENDNOTES

1. Remarks by Victor A. Schroeder, World Energy Conference, September, 1982.
2. Response of SFC Executive Vice President Jimmie Bowden to questions during testimony before the House Interior Appropriations Subcommittee, April 11, 1983.
3. Donald R. Nelson, "A Fuel and Its Money," Corporate Report Minnesota, June, 1983, p. 48.

STATEMENT OF GRANVILLE J. SMITH II, PRESIDENT, ENERGENICS SYSTEMS INC., ON BEHALF OF THE NATIONAL HYDROPOWER ASSOCIATION, WASHINGTON, D.C.

Mr. SMITH. Mr. Chairman, my name is Granville Smith. I am here today on behalf of the National Hydropower Association.

As you know, the energy tax credits were initially implemented to encourage the development of renewable resources. As a member and active participant of that community, in particular the hydropower community, I can say that the energy tax credits have had a very positive, stimulating effect.

However, there has been a much slower than expected development in the community as a result of problems and issues which have arisen, which have been mentioned by the first three members of the panel.

The hydropower community in particular has faced a very long regulatory process which we did not anticipate, so that the preconstruction development of many hydroelectric projects has taken 2, 3, and sometimes 4 years to get to the point where financing can actually occur.

In addition, there has been a slump in development as a result of the decline in oil prices.

And finally, the financing of hydroelectric powerplants, in my experience, and my company is directly involved in the financing of hydropower plants, is still driven very much by energy tax credits and will remain in that mode for a number of years.

Therefore, we hope that the committee in its consideration of S. 1396 will also consider the alternative proposed in S.1305 which provides an energy tax credit extension and an affirmative commitment beyond that extension.

Without going into further detail, I would be happy to answer questions along with the other panel members.

Senator WALLOP. Thank you, Mr. Smith.

[The prepared statement of Granville J. Smith II follows:]

Statement of Granville J. Smith, II
before the
United States Senate
Committee on Finance
Subcommittee on Energy and Agricultural Taxation

Mr. Chairman and members of the subcommittee, my name is Granville J. Smith, and I am the president of Energenics, Inc., a member company of the National Hydropower Association. I am here along with representatives of other renewable energy and cogeneration organizations to talk about the issue of energy tax credits. We appreciate the opportunity to testify here today.

Our experience and the experience of other members of our industry indicates that energy tax credits are frequently critical to the financing of a hydropower project. Therefore, we are encouraged by the fact that this subcommittee is focusing its attention on the credits. However, we feel that the current state of our industry and other renewable energy industries requires that this committee take the broadest approach possible to the credits, and consider the alternative of extending them, as proposed in S. 1305.

The present energy tax credit for hydropower projects was enacted in 1980 as part of the Crude Oil Windfall Profits Tax Act. Since that time, hydropower development has been slowed by three critical factors:

*Regulatory delay.

*Declining oil prices.

*Constantly changing tax environment.

I will address each of these factors briefly in turn.

Regulatory delay has become an obstacle far beyond anyone's expectation during the past few years. A January, 1980, study of hydropower's potential by the General Accounting Office stated that the "obstacles associated with development are complex and at times seem insurmountable..." Although the situation has improved somewhat since that time, it still is not uncommon for the Federal Energy Regulatory Commission to take several years to move a hydropower licensing application through its process to final approval. As a result, while the total capacity represented by license applications has run as high as an estimate of nearly 20,000 megawatts in 1981, the amount of hydro capacity actually coming on line in 1982 has been estimated at no more than 100 megawatts, a small fraction of the amount applied for.

Declining oil prices have, of course, surprised us all to some extent. Projections of future escalation rates have been notoriously inaccurate during recent years, erring on both the high and low sides by orders of magnitude. Unfortunately for the hydropower industry and for other new energy technologies, prices experienced recently have been far below the levels anticipated in 1980 when the energy tax credits were enacted. This in turn has meant lower avoided cost projections for most utilities and a poorer market for hydropower.

A constantly changing tax environment has probably done as much as anything else to slow the pace of hydropower development. Since the credits were enacted, the industry has lived under a constant cloud of uncertainty in this area. The Administration has attempted twice to repeal the energy tax credits. Both the Economic Recovery Tax Act of 1981 and the Tax Equity and Fiscal Responsibility Act of 1982 added new rules which altered the tax consequences of capital investments in hydropower projects. More recently, the Treasury Department threatened to change the depreciation treatment of hydropower and other renewable energy and cogeneration projects by placing independent, non-utility power production facilities in a 15-year, rather than a five-year, recovery property category. Indeed, at this very moment, the Ways and Means Committee is considering altering the rules governing the tax treatment of power sale contracts so that the investment and energy tax credits could be denied to any hydropower facility whose output is sold to a municipal utility or tax exempt electric cooperative.

These factors have combined to substantially slow the rate of hydropower development over the rate that was expected in 1980 when the energy tax credit for hydropower projects was enacted. For this reason, this industry urgently needs an extension of the credit beyond its present 1985 expiration date. Accordingly, while we are pleased that this committee is turning its attention to the consideration of energy tax credits, we urge it not to confine its attention to S. 1396, which is the subject of these hearings, but to consider more comprehensive proposals, such as the extension proposed in S. 1305, as well.

Senator WALLOP. Mr. Roach, I guess it comes as no surprise to me that the Environmental Policy Center is against the basic policy of developing energy self-sufficiency in this country.

You know, I really wonder what it takes to persuade the Environmental Policy Center and others of your persuasion that 15 years without a commercial project can scarcely be called the rapid commercialization of an industry. And I wonder what it takes to persuade you of the environmental consequences of crisis government, where a hungry and a cold and an insecure nation makes decisions on a rapid basis to commercialize, to do anything to resolve the pain that it is presently suffering.

If you did not see some of that in the last two crises I don't know what it would take to persuade you of it—I really do not

You talk about the environmental uncertainties that are attendant to synthetic fuel development, and there are some. There are a lot of environmental uncertainties to doing nothing, as well. And it seems to me that a prudent country would act prudently, which this is.

I don't think it is a question—and I dispute your comment—that it is simply throwing more money at a problem. You wonder if energy tax credits would be more successful the second time around. I wonder what cost there is to the Government of an energy tax credit that isn't used, because you say there is no economic viability. If there can be some, it just seems to me that a country which has its energy feet more or less on the ground will have a great deal more general level of economic viability than one which does not. And one which does not does not make sensible decisions. We have not in the past, and I see no reason to suppose that under crisis government we would in the future.

That is one opinion, but I don't think that where you are is on environmentally sound ground, and I do not think where you are is on economically sound ground; and where you appear to be is, once again, as a group, trying to stifle the orderly economic development of a country which depends on energy for its domestic tranquility and its international security.

Mr. ROACH. Mr. Chairman, may I respond?

There are a number of points made there, and I am not sure I can remember to address all of them, but I would like to at least attempt to.

No. 1, don't confuse our position on this particular legislation or the Federal synthetic fuels commercialization program in general with our stand on energy self-sufficiency nor on synthetic fuels.

We are very much in favor of developing sound and reliable energy policy for this country. That is why we are particularly opposed to the Federal synthetic fuels commericialization program as it exists today.

With respect to energy security, the issue is not as much where the supplies are located as the reliability and the cost effectiveness of those sources of supply. And on those issues, synthetic fuels fall short today.

We have had very limited domestic experience in synthetic fuels development, even on a demonstration scale Foreign experience with commercialization does not exactly inspire confidence.

Today synthetic fuels are more costly than many conventional alternative sources of supply. The technical reliability and cost-efficiency problems of this technology are still such that they are not reliable; they will not make a significant contribution to our energy security at this point.

If we are really concerned with developing a sound synthetic fuels industry, let's take the proper steps first; let's do some research and development.

The environmental policy center has followed projects which have applied to the Synthetic Fuels Corporation in the last couple of years, and quite frankly it is astounding the lack of development that has gone into some of those.

For example, the first project which received a letter of Intent from the Synthetic Fuels Corporation employs a gasifier that has never been built.

Now, it seems to me that the way you develop an energy technology is not to say, "OK. let's build something on a commercial scale and see if it works. And if it doesn't, we'll return to the Government for more subsidies." The way it is accomplished is through an orderly R&D program to get some information on how well that technology will work.

This is not a viewpoint that is particular to the environment policy center.

I would like to read you a short piece that I put together from an article which appears earlier in the Energy Daily: Back in 1982, in October, Amoco Production Co. president Leland Adams stated that oil prices would have to rise substantially before the development costs of synthetic fuels are justified. Now, he cited prices of $60 to $90 a barrel for oil shale, $80 a barrel for direct liquefaction products, $90 a barrel for products from indirect liquefaction. And with respect to oil shale, he noted that the economics had forced Amoco, and this is a quote, "back to the laboratory to try to produce the fuel more economically."

What we are suggesting is that the priorities are askew here. There are other alternative sources of supply which could achieve the same degree of capacity at much less cost, at much less environmental damage.

Senator WALLOP. What?

Mr. ROACH. I would suggest energy conservation, increased automobile fuel efficiency. I think some of the examples discussed here today would do that.

Senator WALLOP. You know, I have heard that, Mr. Roach, and we have done that in this country rather dramatically. And most of what we have done by way of energy efficiency in the industrial world, the easy part of it has been done. The remaining 8 or 9 percent that is available to them is about twice as costly as the previous 92 or 93 percent. But that's an additional issue, not another issue, or a substitute issue. That is already being addressed and is being done.

But I don't believe that anybody in this country who takes a look at its long-term and economic and energy needs can believe that of and by itself that will substitute for any coming crisis.

Mr. ROACH. It will certainly not substitute for development on all fronts. The question is, what strategies one pushes more aggressively than others. And I think with respect to synthetic fuels, we have given it a privileged position, and—quite frankly—we have backed a loser.

If we look at the provisions of the Energy Security Act which were passed in 1979, many of the titles beside the synthetic fuels title have been decimated. The biomass title is essentially gone; the conservation and solar bank title has never been funded at even close to the levels authorized in that legislation. There have even been attempts to cut back allocations on SPR; luckily they have been beaten back.

The question is, Why the inequity?

Senator WALLOP. Well, we can sit here and discuss things. SPRO may have an interesting consequence, in that a great deal of what we have put in the ground will come out unusable and unavailable to us, and in 20 years if each of us is alive and wants to come back and look at where money was spent well and badly, I would bet you that money will be spent well if we proceed with the synthetic fuel industry and will not have been viewed as spent very well SPRO. But that's another topic for another time.

I appreciate the panel's presence here this morning. Thank you.

The next panel consists of Mr. William R. Harris, group vice president of chemicals, Pittsburgh Plate Glass Industries, Inc., who is accompanied by Mr. Edward Sproull, the vice president of tax administration for PPG Industries; Mr. John Cassidy, vice president of E. F. Hutton & Co., on behalf of the Renewable Fuels Association; Mr. Lynn Glover, program manager, Solar 100-Energy Programs of the McDonnell Douglas Astronautics Co.; Dr. Carel Otte, president of the geothermal division of Union Oil Co.; and Mr. Mark Riedy of Spriggs, Bode Hollingsworth, Washington, D.C., on behalf of the Energy Cycle, Inc., Lincoln, Nebr.

Mr. Harris, if you would begin, please.

STATEMENT OF WILLIAM R. HARRIS, GROUP VICE PRESIDENT, CHEMICALS, PPG INDUSTRIES, INC.

Mr. HARRIS. Thank you, Mr. Chairman.

My name is William R. Harris, group vice president, chemicals, for PPG Industries. Accompanying me today is Ed Sproull, vice president of tax administration for PPG.

We appreciate this opportunity to present PPG's views in support of S. 1396.

PPG is a major manufacturer of glass, chemicals, coatings, and resins, and fiberglass, and we employ 27,000 people nationwide. We believe Senate bill 1396 will encourage greater energy independence by allowing the incentive effect intended by the Congress in 1978 and 1980, when energy tax incentives were enacted.

Further, we applaud the chairman of this subcommittee and the other distinguished Senators who have sponsored this legislation.

PPG supports Senate bill 1396, and we will direct our remarks to section 7 of the bill.

The chloralkali industry uses electrolytic cells to decompose a salt brine into its coproducts which are chlorine and caustic soda. It is the second largest industrial user of electricity in the United States after the aluminum industry.

Chlorine and caustic soda are basic chemicals used primarily as raw materials to produce a wide variety of other products.

The Energy Tax Act of 1978 enacted a 10-percent energy investment credit for certain energy conservation and conversion investments. Investments which qualified for the energy credit included a category of energy-conservation investment called specially defined energy property.

In addition to specified items of qualifying energy conservation property, this category included administrative authority for the Secretary of the Treasury to specify additional qualifying property by regulations. This Secretarial authority was never exercised before these provisions generally expired at the end of 1982.

In 1980, the statutory rules were expanded and modified, and the effective period for some credits was extended through 1985. Also, modifications to alumina electrolytic cells were added as a specifically eligible item under the specially defined energy property category.

The 1980 legislation also promulgated the so-called affirmative commitment rule for other categories of energy investment for which energy credit would otherwise expire at the end of 1982.

This rule was intended to allow a sufficient period for long-term energy conversion and conservation projects to be planned, financed, and completed during the effective period of the credit, so that the incentive effect of the credit is not diminished.

In 1981, shortly after the 1980 changes to the energy credit provisions, PPG filed an application requesting that modifications to its chloralkali electrolytic cells be made eligible for the energy credit under the Secretarial authority delegated by the 1978 act. No response was received on this application.

In 1982, Congress enacted legislation which made energy saving modifications to chloralkali cells specifically eligible for the energy credit. Although the affirmative commitment rule applies to alumina cell modifications and all other categories of energy property for which the energy credit otherwise expired at the end of 1982, this rule was not made available to long-term chloralkali projects.

PPG has two chloralkali modifications projects underway at this time. Construction on both projects was begun before the end of 1982. One project will be complete in 1983, and completion of the other project is not anticipated until 1985.

These energy conservation projects are costly and have significant leadtimes. They are estimated to reduce energy consumption by as much as 25 percent. Substantial commitments of funds were made by PPG on these projects on the reasonable expectation that they would be eligible for the energy credit.

PPG urges enactment of section 7 of Senate bill 1396 to allow energy-saving modifications to chloralkali cells the same existing law treatment, under the affirmative commitment rule, as is provided to alumina cell modifications and every other category of energy credit property for which the energy credit generally expired at the end of last year.

We believe energy tax credits pay for themselves, free up generated capital for further investment, and are significant incentives to encourage industry in total to help move our country toward energy self-sufficiency.

Thank you. I would be happy to respond to any questions.

Senator WALLOP. Thank you, Mr. Harris.

[The prepared statement of William Harris follows:]

STATEMENT

OF

WILLIAM R. HARRIS

Mr. Chairman, distinguished members of the Subcommittee, my name is William R. Harris. I am Group Vice President, Chemicals, of PPG Industries, Inc. (PPG). I am accompanied by Edward I. Sproull, Jr., Vice President, Tax Administration, for PPG. We sincerely appreciate the opportunity to appear before the Subcommittee this morning in support of S. 1396, to extend affirmative commitment rules for purposes of the energy investment credit. Our testimony will most particularly concern Section 7 of the bill, which deals with an affirmative commitment rule for modifications to chlor-alkali electrolytic cells.

PPG is a major manufacturer of glass, chemicals, coatings and resins, and fiber glass products, headquartered in Pittsburgh, Pennsylvania. The company operates 47 major manufacturing and research facilities in seventeen states, employing approximately 27,000 people nationwide.

As an industrial manufacturer, for which energy is a substantial portion of operating needs and costs, we have a significant interest in legislation which encourages investments in energy-conserving property. We applaud the distinguished Senators who have shown foresight and conviction in sponsoring this legislation, including the chairman of this Subcommittee, who has long been a leader in efforts to encourage energy conservation and the development of alternative energy resources.

While energy is a substantial cost item to PPG it is not our only cost, and represents some five to seven percent of total sales dollars. Energy costs are only one important cost item among many. Within a corporation, competition for the capital expenditure dollar requires management to consider the ultimate cost. As such, the pursuit of energy conservation for conservation's sake is a luxury we cannot afford to pursue in our highly competitive markets.

We would like to focus on the chlorine and caustic soda portion of our chemical manufacturing business, and why we believe Section 7 of S. 1396 provides a mechanism for fulfilling the intent of Congress regarding the present law provisions of the energy tax credits.

The chlor-alkali industry is highly energy-intensive, requiring large amounts of electricity. It is the second largest industrial user of electrical energy in the United States, just behind the aluminum industry. Electrolytic cells are used to electrically decompose a salt brine into its co-products which are chlorine and caustic soda.

Chlorine is a basic chemical, widely produced in this country and the world, and is used as an intermediate feedstock in producing a host of organic and inorganic chemicals. For example, chlorine is a basic component of solvents for degreasing and dry cleaning, insecticides, refrigerants, lubricant additives and monomers for making plastics such as polyvinyl chloride. Other major uses of chlorine are as a bleaching agent in the pulp and paper and textile industries and for the sanitation of water.

The co-product, caustic soda, is a basic raw material for the chemical, pulp and paper, rayon, cellophane, aluminum, soap, textile and petroleum refining industries.

The use of tax credits as an incentive to stimulate the modernization of industrial processes is a concept that is well established in our tax system. Tax credits were first approved by Congress in 1962 with the enactment of the investment credit.

Congress appropriately recognized the incentive effects of tax credits when it enacted, as part of the Energy Tax Act of 1978, a variety of business energy credits to encourage the development of alternative energy resources and industrial energy conservation. It realized that the energy marketplace, with its myriad of price controls, was not sending the proper price signals to consumers, and, therefore, offered an incentive to reduce U.S. dependence on foreign oil supplies and bring energy supply and demand into balance.

The Energy Tax Act of 1978 included a tax credit for one category of energy conservation investment called "specially defined energy property". This category of eligible investment included a list of 11 specified items of property, such as heat wheels and recuperators. In addition, authority was given to the Secretary of the Treasury or his delegate to specify additional qualifying property by regulations. I.R.S. regulations interpreting these provisions require that an item added to the list of specially defined energy property must be "similar in function" to items specifically listed in the Internal Revenue Code. Since Congress enacted these provisions in 1978, the Secretary and the I.R.S. did not exercise their authority to qualify a single item in this category, before the credit for this category of energy property generally expired at the end of last year.

Energy-saving modifications to alumina electrolytic cells were made specifically eligible for the energy credit in the "specially defined energy property" category under legislation enacted in 1980. Chlor-alkali electrolytic cell modifications save energy in essentially the same manner as alumina electrolytic cell modifications. PPG accordingly filed an application with the I.R.S. to qualify its planned chlor-alkali cell modifications under this Secretarial authority. No action was taken on this application, and in fact we recently received a letter from the I.R.S. stating that because the effective period for the credit on "specially defined energy property" generally expired at the end of 1982, they had closed our ruling request without any action.

Because of this inaction, the Congress added chlor-alkali cell modifications as an item specifically eligible for the energy credit in the gas tax legislation last year. As was done when alumina cell modifications were made specifically eligible in 1980, the Senate-passed provisions also allowed the "affirmative commitment rule" for cell modifications which were planned or under construction at the end of 1982. However, the "affirmative commitment rule" was not made available to this category of energy conservation investment when the gas tax bill was finally enacted.

As you know, the "affirmative commitment rule", found in Code Section 46 (a) (2) (C) (iii), generally provides an extension of otherwise expiring energy credits beyond 1982 where certain actions have been undertaken in connection with an energy credit project, with a construction period of two years or more, first by the end of 1982 and second by the end of 1985.

In PPG's case, we have two chlor-alkali cell modification projects underway at this time. Construction was begun on both projects before the end of 1982. One project will probably be completed this year. This project represents a total expenditure of some $100 million. We expect it to result in an estimated energy savings equivalent of more than 400,000 barrels of oil per year, for a 25 percent reduction in energy usage at that one facility. The second project involves a total expenditure of approximately the same amount. It is expected to result in energy savings of some 15 percent due to differences in the existing technology at the two facilities. Completion of the second modification project is not anticipated until 1985.

PPG is committed to complete these energy conservation projects. Yet it finds itself in the position of having the energy credit unavailable for about one-half of the qualifying investment in its chlor-alkali modification program. This problem arises because, unlike modifications to alumina cells and every other type of property for which the energy credit generally expired at the end of 1982, the affirmative commitment rule in present law is not available for modifications to chlor-alkali cells. We are not suggesting an extension of the existing affirmative commitment rule for this energy investment, but merely the same availability of this existing rule as for similarly situated categories of energy investment. This is particularly appropriate where substantial commitments of funds for energy conservation were made in a reasonable expectation of the availability of the affirmative commitment rule.

These improvements are motivated by energy efficiency. They will not increase the productive capacity and they are not periodic replacements of cell components. Without favorable action on this legislation, these projects will be denied the amount of energy tax credits anticipated when funding for them was approved by the company. The energy tax credit was intended to make energy conservation or conversion investments a little more attractive than other types of investments to those who must make these investment decisions. We are of course hopeful the affirmative commitment rule for "modifications to chlor-alkali cells" will be made available as was the case for the virtually identical technology utilized by the aluminum industry.

Once again, I would like to extend my personal appreciation to the sponsors of S. 1396 and the Subcommittee Chairman for his continuing interest in the benefits to the nation of energy investment tax credits to encourage energy conservation and the development of alternative energy resources.

In summary, we believe the intent of Congress, when it enacted the Energy Tax Act of 1978, has not been realized, that continuation of energy tax credits is essential to moving the Nation toward greater energy independence, and that credits complement the overall objectives of strengthening the economy, reducing inflation, increasing productivity, and adding to in-place capital formation efforts. We believe energy tax credits pay for themselves, free up generated capital for further investment, and are significant incentives to encourage industry in total to help move our country toward energy self-sufficiency. PPG supports S. 1396 and urges its prompt enactment.

STATEMENT OF JOHN H. CASSIDY, VICE PRESIDENT, E. F. HUTTON & CO., ON BEHALF OF THE RENEWABLE FUELS ASSOCIATION, WASHINGTON, D.C.

Mr. Cassidy. Thank you, Mr. Chairman.

I appreciate the opportunity to testify as a representative of the investment community in favor of the Energy Security Tax Act of 1983.

The primary purpose of my remarks will be to address the significance of energy tax credits in the financing of renewable energy projects, and most specifically within the contexts of financing biomass fuel production facilities.

First, I would like to refer to certain remarks that appeared in the Congressional Record made by Senator Jackson on May 26 of this year relating to this proposed legislation:

> Because many of these renewable energy projects are first-of-a-kind facilities, the tax credits are crucial to the economic viability of the project; indeed, the availability of these tax credits, or the lack thereof, may well be the determining factor in whether the project is built or not.

Based on my experience in the financing of renewable energy projects, these statements are entirely accurate. Last year E. F. Hutton & Co. sold to individuals, in increments of $5,000, $32 million of limited partnership interests in a limited partnership formed under the laws of the State of Indiana to construct and operate an ethanol production facility in South Bend, Ind. Without these energy tax credits available to the equity investor which represented 24 percent of his expected return in the first 3 years of the project, this deal could not have been sold nor would we have considered seriously bringing it to the market for sale.

Presently we are preparing to market the equity capital necessary to finance a second ethanol production facility to be constructed in the State of Minnesota. Given the present expiration date of December 1985 for energy tax credits, we believe that unless we can complete this financing by the end of September 1983 the project may be canceled. The anticipated construction term of 26 months will not be achieved if significant construction progress does not occur prior to the onset of winter weather conditions. With no assurance of completion date by yearend 1985, we expose our investors to a serious risk of losing all or a portion of the energy tax credits to the extent the plant's completion extends beyond 1985.

In combination with other risks of this program, we feel the potential benefits of the transaction would no longer be commensurate with the total-risk profile of the project, and therefore we may be forced to abort the transaction. Obviously, enactment of this proposed legislation would eliminate this concern and hopefully preserve this and other projects of this type.

I think these two examples certainly corroborate the statement by Senator Jackson as to the importance of energy tax credits in the financing and in turn the construction and completion of renewable energy projects.

Our experience in other renewable resource areas such as solar, wind, and hydro is very similar to the conclusion we have reached in the biomass fuel financing area—the absence of energy tax credits substantially reduces the feasibility of financing these projects.

Without a doubt, the extension of the energy tax credits as proposed will encourage greater investment in this area and bring to fruition more renewable energy projects that otherwise would not be completed. If that goal is the desire of this committee and the Congress, I strongly urge the passage of the Energy Security Tax Incentives Act of 1983.

Thank you.

Senator **Wallop**. Thank you very much, Mr. Cassidy.

[The prepared statement of John H. Cassidy follows:]

EFHutton
E F Hutton & Company Inc One Battery Park Plaza New York N Y 10004 (212) 742-3207

John H Cassidy
Vice President

TO: Members of the Finance Subcommittee on Energy and Agriculture Taxation

FROM: John H. Cassidy
Vice President
E.F. Hutton & Company Inc.

DATE: June 15, 1983

RE: S. 1396 - Energy Security Tax Incentives Act of 1983
A bill to amend the Internal Revenue Code of 1954 to extend the period for qualifying certain property for the energy tax credit.

Mr. Chairman and distinguised members of the Committee, I appreciate the opportunity to testify as a representitive of the investment community in favor of the Energy Security Tax Act of 1983. The primary purpose of my remarks will be to address the significance of energy tax credits in the financing of renewable energy projects and most specifically within the context of financing biomass fuel production facilities.

As a member of E.F. Hutton & Company's Tax Shelter/Direct Investment Product Origination and Review Group, I participate actively in the evaluation and origination of tax advantaged investments for individuals.

In performing this evaluation, we must consider many aspects of a potential transaction. One of the rewards or benefits of a tax oriented transaction can be tax credits available to owners (for tax purposes) of certain qualifying property. In this regard, I refer to certain comments by Senators Domenici and Jackson concerning the necessity of extending energy tax credits.

On May 26, 1983, the following remarks made by Senator Domenici appeared in the Congressional Record:

> "Existing energy tax credits for solar, wind, geothermal, and biomass renewable energy resources will expire on December 31, 1985. If project sponsors are unable to complete construction and place the renewable energy property in service by the end of the calendar year 1985, then the energy tax credit cannot be taken. The threat that these energy tax credits may not be available to projects which do not meet the 1985 deadline may prohibit renewable energy projects from being initiated today."

Additionally, Senator Jackson's comments about this proposed legislation included:

> "Because many of these renewable energy projects are first-of-a-kind facilities, the tax credits are crucial to the economic viability of the project; indeed, the availability of these tax credits, or the lack thereof, may well be the determining factor in whether the project is built or not."

Based on my experience in the financing of renewable energy projects, these statements are absolutely true. Last year Hutton sold to individuals in $5,000 increments $32 million of limited partnership interests in a limited partnership formed under the laws of the State of Indiana to construct and operate an ethanol production facility in South Bend, Indiana. To date, this project is the only project with financing in place of the 11 conditional commitments awarded by the Department of Energy to guarantee the repayment of 90% of the debt of biomass fuel production facilities under Title II of the Energy Security Act. Given the unique nature of the project and risks inherent in a pure project financing of this type, it was difficult to sell these equity interests; however, after several months we did complete the equity financing and the plant is presently under construction. Without the energy tax credits available to the equity investor which represented 24% of his expected return in the first three years of the project, this deal could not have been sold nor would we have considered seriously bringing it to the public for sale.

Presently we are preparing to market the equity capital necessary to finance a second ethanol production facility to be constructed in the state of Minnesota. Given the present expiration date of December 1985 for energy tax credits, we believe that unless we can complete the financing by the end of September 1983 the project may be cancelled. The anticipated construction term of 26 months will not be achieved if significant construction progress does not occur prior to the onset of winter weather conditions. With no assurance of completion date by year-end 1985, we expose our investors to a serious risk of losing all or a portion of the energy tax credits to the extent the plant's completion extends beyond 1985. In combination with the other risks of the program, we feel the potential benefits of the transaction would no longer be commensurate with the total risk profile of the project, and therefore we may be forced to abort the transaction. Obviously, enactment of this proposed legislation would eliminate this concern and hopefully preserve the project.

These two examples certainly corroborate the statements by Senators Domenici and Jackson as to the importance of energy tax credits in the financing and in turn the construction and completion of renewable energy projects.

Our experience in other renewable resource areas such as solar, wind and hydro is very similar to the conclusion we have reached in biomass fuel financing - the absence of energy tax credits substantially reduces the feasibility of financing the project. The basis for such a conclusion relates to the financing structure of a vast majority of these energy projects. Most of the transactions in the renewable resource area depend upon the transaction or project itself to repay the debt holders and provide equity investors with an adequate return. Very few renewable energy projects include as credit support the cash flow and balance sheet of a large, profitable company. As pure project financings, these transactions generally have a higher risk level than transactions with returns (revenues) guaranteed by strong viable companies. The uncertainty of revenues inherent to these projects requires greater potential return for the owner or risk taker. This uncertainty has increased in the last 12 months as energy prices have declined and/or stabilized. However, a major part of that incremental return can be achieved through energy tax credits.

Without a doubt, the extension of the energy tax credits as proposed will encourage greater investment in this area and bring to fruition more renewable energy projects that otherwise would not be completed. If that goal is the desire of this Committee and Congress, I strongly urge the passage of the Energy Security Tax Incentives Act of 1983.

JHC/mme

STATEMENT OF LYNN W. GLOVER, PROGRAM MANAGER, UTILITIES—CENTRAL RECEIVER SYSTEMS, McDONNELL DOUGLAS ASTRONAUTICS CO.

Mr. GLOVER. Mr. Chairman, I appreciate the opportunity to speak this morning about the solar central receiver technology, which represents one of my company's efforts in the energy field.

I agree with statements made by others this morning who support this bill, and I would like to add a few remarks about a specific project which would benefit from enactment of S.B. 1396, and which requires it to proceed.

I have a couple of photographs here that will illustrate what I will be talking about this morning.

The solar central receiver technology has the potential for competing successfully in the free market, and our market analysis shows that 3,500 megawatts of this technology can be placed in service in California alone by the year 2017.

My company has been involved in solar central receivers for over the last 10 years. Our principal objective is to be a manufacturer of heliostats, which are the major equipment item in this technology. We have developed these heliostats from a 13-square-meter prototype for the National Science Foundation, and then later for the DOE and its predecessor to a 95-square-meter commercial scale today.

We are also the design integrator for solar one. In this role we have supported the Congress and DOE in this extremely significant solar central receiver pilot plant, a project in which the Government and Southern California Edison have invested $140 million with exceptional effectiveness.

As a result of the exciting progress that we have seen at solar one and our work in developing the heliostats, we see a high probability for the commercial success of this technology. However, continued support by the Congress through such means as the energy tax credit will be essential in achieving commercial reality until it is generally accepted by the electric utility industry and the investment community through a demonstration at a commercial size, and until economies of scale are realized.

As a specific example of how this may be achieved, we are proposing to construct the first commercial-size plant in the Lucerne Valley of southern California. And this is at a site owned by the Southern California Edison Co. It is called Solar-100, and it's a 100 megawatt plant 10 times the size of Solar One.

We have concluded that this represents an economically viable commercial size which has advantages of modularity for convenient and rapid additions to utility capacity.

Such a project requires substantial funds and involves significant risks. Individual utility companies and their State regulators are not prepared to assume that responsibility and to place their local rate-payors at risk to do it.

Pioneering utilities such as Southern California Edison are seeking third-party help to do that job; however, for the magnitude of funds required and with the first-of-a-kind project like this, financing in the marketplace requires untenable guarantees and promises of return on investment, and we have no other available sources of funds other than private parties to bring about this required demonstration.

Therefore, only parties who have a beneficial interest in the technology, such as suppliers of the solar equipment, may be willing to invest in order to create a future market for their goods and services. And we need all of the help we can get to do that.

Yet, without the energy-tax credit, return on investment does not even meet the cost of capital. Also, the payback period would go from a difficult-to-accept 10 years to an impossible 17 years if the energy tax credit were not available.

To set the stage for this commercialization, Solar-100 must go forward now, and we and our partners, along with Southern California Edison and the California Public Utilities Commission who must approve the project, must make decisions and commitments for which the energy tax credit is a prerequisite.

Therefore, we need Senate bill 1396 so that the decisionmakers in my company and the others involved in the project will address the remaining issues which must be clear to allow this project to go forward on schedule.

I would like just a moment to address some of the revenue impact and benefits of the affirmative commitment as it applies to this project.

If completed, the project sponsors would earn approximately $80 million in energy-tax credits for an investment they would make in the range of a half a billion dollars.

On the other hand, over its life the project will return $800 million to as much as $2.5 billion to the Treasury, depending on future energy prices, just due to taxes on the sale of energy, and much more if wages and other taxable items are considered.

This and succeeding plants will each directly create 7,000 man-years of manufacturing, construction, and operating jobs, and these U.S. workers will be employed throughout the country.

In addition, the output of these solar plants will displace 800,000 barrels of oil imports each year for each plant, and we see the potential of 35 plants of this technology in California alone by 2017.

We will also maintain an existing world lead in this technology and create the opportunity of exporting these powerplants. And in addition we will have for ourselves a clean renewable resource which can be sited in a wide region, ranging at least from Texas to California and northward into Wyoming and Idaho, and in some places where economic development of the land is not otherwise likely.

This represents a summary of the points in my prepared testimony, and I would like to thank you for the opportunity to address the issue.

Senator WALLOP. Thank you very much, Mr. Glover.

[The prepared statement of Lynn Glover follows:]

STATEMENT OF LYNN W. GLOVER

PROGRAM MANAGER, UTILITIES -- CENTRAL RECEIVER SYSTEMS

McDONNELL DOUGLAS ASTRONAUTICS COMPANY

SUMMARY

McDonnell Douglas Astronautics Company has been actively engaged in the development of solar central receiver technology for the last 10 years. This has involved basic engineering, manufacturing of prototype heliostats, research, and economic and technical analysis aimed at commercializing solar thermal central receiver technology in the United States. Our principal interest has been to develop a market for the commercial use of heliostat hardware (two axis tracking mirrors), a principal component of solar central receiver plants. We believe our interests are typical of solar suppliers for major plants. To illustrate the situation, we will discuss a specific proposed plant.

At the present time, McDonnell Douglas is proposing to construct a 100 megawatt solar central receiver project, Solar-100, in the Lucerne Valley of California on a site owned by Southern California Edison Company (SCE). If SCE and McDonnell Douglas can agree to go forward with this project within the next six months, and the California Public Utilities Commission approves of the various contractual arrangements that need to be reviewed by it, final design and initial construction can commence in 1984. If construction commences in 1984, the first half of the plant is scheduled to come on line by December, 1987, and the second half of the plant will come on line by December, 1991.

The project involves significant risks and costs in commercializing a new technology involving large heliostats, a molten salt heat transfer system, and various other equipment that have not been used before. Because the initial capital costs and risks are very high, and the pay back period as well as the rate of return well below normal corporate hurdles, financing by unaffiliated third parties is not feasible and the project can only be financed by funding from affiliated equipment suppliers. If the energy tax credits are not available, McDonnell Douglas and other affiliated suppliers will not participate in this project. We are considering this investment principally because of our belief that a future market for the purchase of solar central receiver plants by utilities may develop. McDonnell Douglas and the other equipment suppliers to Solar-100 could become the providers of goods and services in that market.

This project alone will create more than 6700 man-years of jobs in the next 35 years and reduce the importation of oil by 800,000 barrels per year at a savings of $24 million a year (at oil priced at $30 a barrel). Not only will these jobs and savings accrue if the project is successful, but other jobs and further savings will occur if the technology is commercially demonstrated and the other plants built. Additionally, there are significant opportunities for export of this technology to other countries, further assisting the U.S. balance of payments.

This project is on the drawing boards right now. In the next few months, decisions need to be made and millions of dollars of funds committed to make this project go forward. We cannot commit these funds and make these decisions to go forward without a resolution of the issue before you today -- namely, the passage of this legislation allowing us to take the energy tax credits for this project.

We wish to make it clear that we support efforts initiated by other members of the Senate and House of Representatives to extend and enhance the energy tax credits. While not wishing to take any momentum away from that effort, we are compelled to emphasize that immediate passage of this legislation is required, in addition to other actions occurring, before we can commit substantial funds to this project.

INTRODUCTION

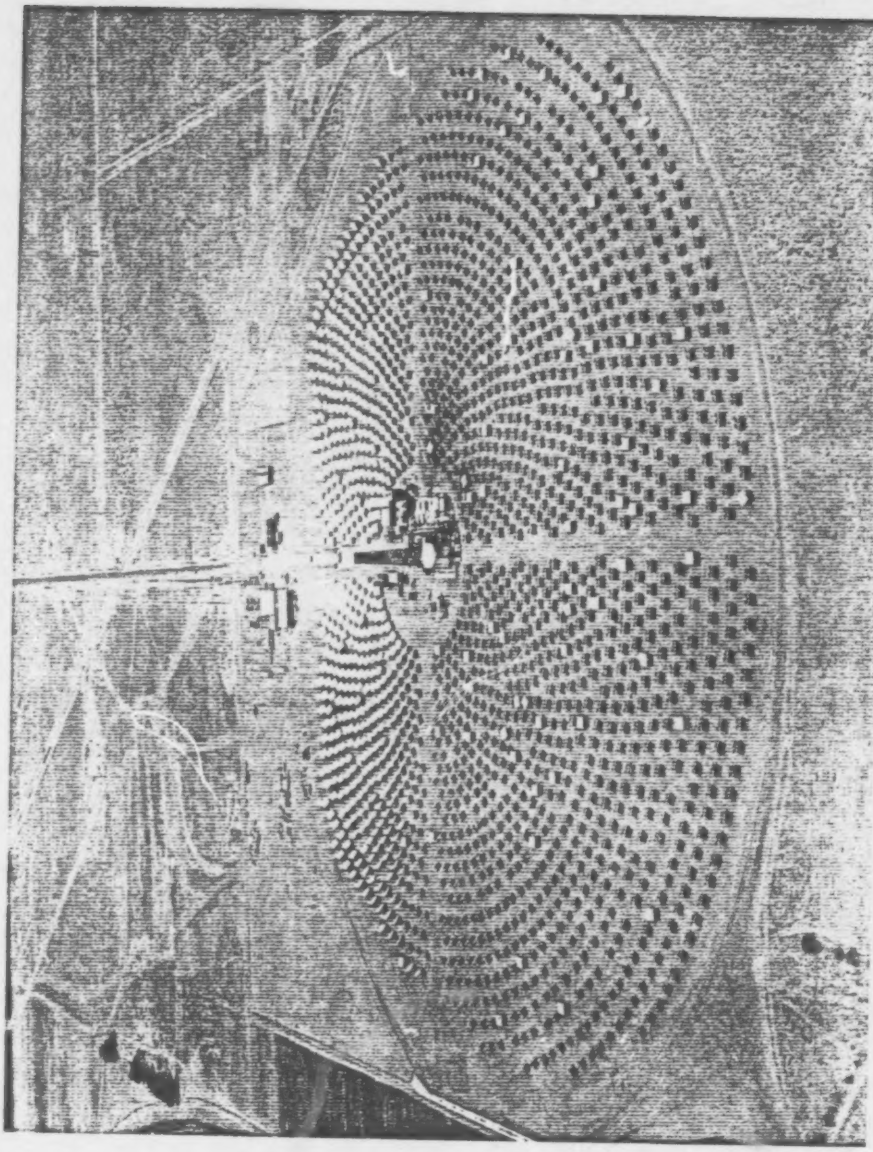
Mr. Chairman and Members of the Committee. I appreciate this opportunity to testify on behalf of McDonnell Douglas Astronautics Company with regard to S. 1396, the Energy Security Tax Incentives Act of 1983. I am the project manager for a 100 megawatt solar central receiver project, Solar-100. On behalf of McDonnell Douglas, the principal supplier sponsor of this project, and the other companies working with us to make this project a reality, I wish to express to you our enthusiastic support for the passage of this legislation.

BRIEF HISTORY

The progress to date in the development of this technology has been characterized by a cooperative effort by the Federal government, a number of electric utilities, and a number of companies like ourselves, who have been keenly interested in participating in the development of a market for the equipment that can efficiently use the sun's energy for large scale commercial power production.

Solar One

Through the involvement and support of the Congress and the Department of Energy over the last 10 years, there are several significant events heralding the development of the solar central receiver as a viable energy source for electric



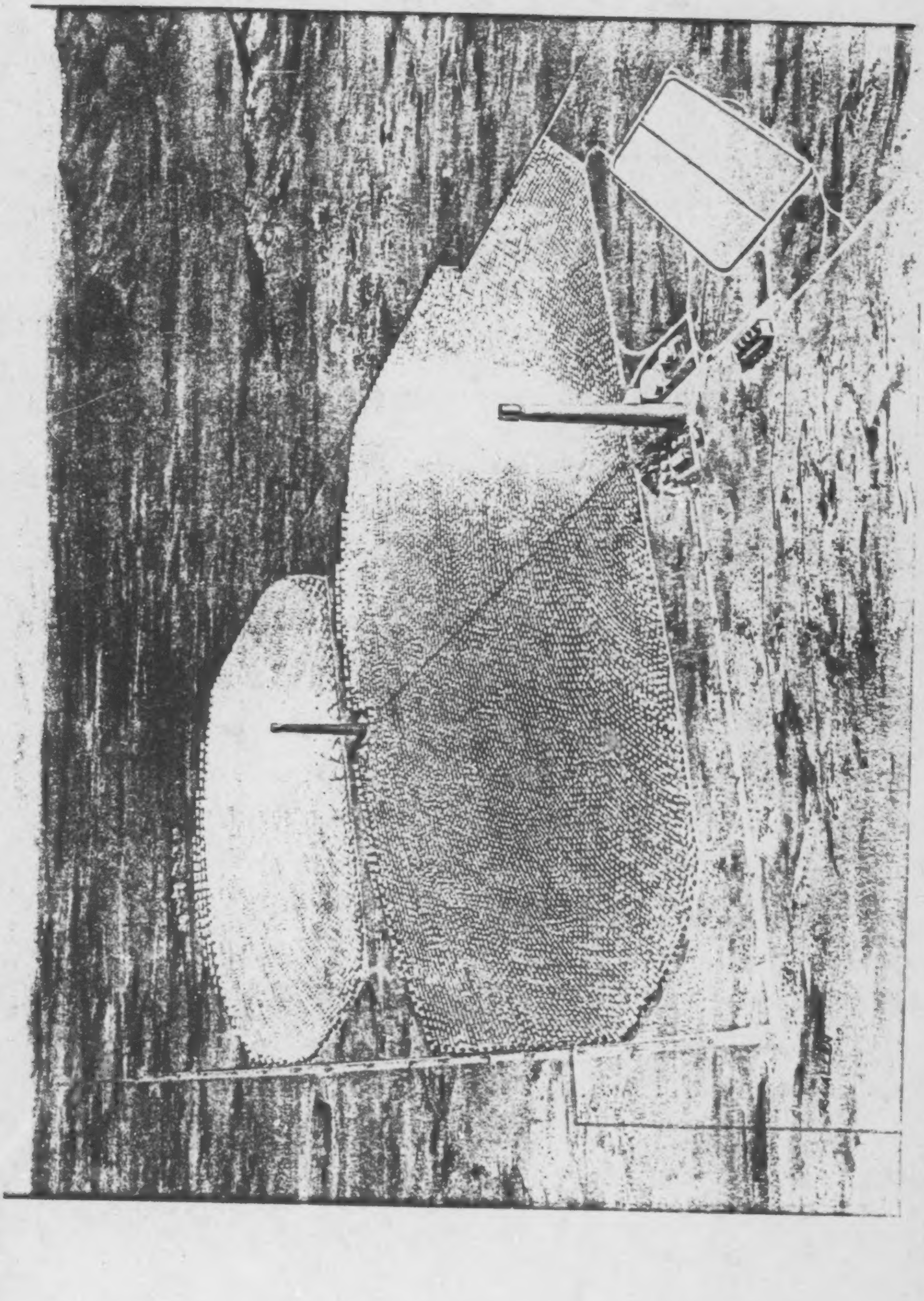
ENERGY PROGRAMS McDONNELL DOUGLAS ASTRONAUTICS COMPANY generation in the United States. These events culminated on April 12, 1982, when a 10 megawatt solar central receiver pilot plant near Barstow, California, became operational and on November, 1982, when the facility was dedicated. (See attached photo)

This plant, known as Solar-One, is undergoing a 5-year test program. It is currently the world's largest electric generating station being successfully powered by solar energy.

Solar-100

Last year, as a follow up to the research and development that has been invested in Solar-One and the expertise gained thereunder, Southern California Edison requested proposals from private industry for the development of the first commercial scale solar central receiver plant at SCE's Lucerne Valley site in California's Mohave Desert. Four companies, including overselves, responded to the SCE request and expressed confidence in the technologies that are available and optimism that financing can be worked out.

Southern California Edison has been a utility leader in demonstrating interest in renewable energy resources generally, with a commitment to develop as part of its power generating facilities, 2100 megawatts of renewable energy resources by the early 1990's. Of this amount, 890 megawatts have been designated to come from solar energy. In addition, there is



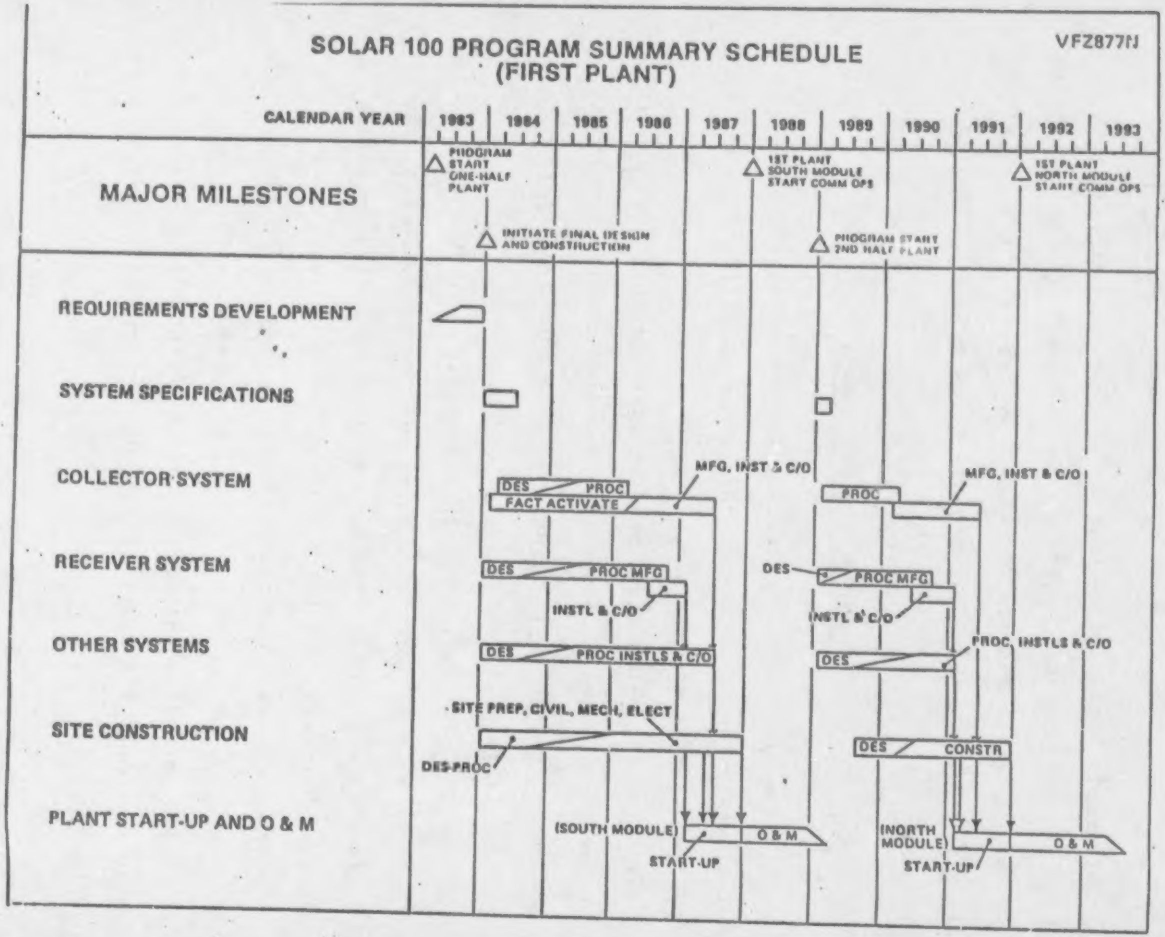
strong interest among other utilities in the Southwest to participate in more than 49 follow-on, 100 megawatt, central receiver plants for capacity additions by the year 2000.

Pursuant to a more recent request of SCE for offers to build a solar central receiver power plant at this site, we have submitted an offer to SCE on June 10, 1983, and hope to begin negotiations with SCE in the next few weeks. I have attached a design concept illustration of our proposal.

SOLAR-100 PROGRAM SUMMARY SCHEDULE

I have attached to this testimony a schedule summarizing the major milestones in the development of Solar-100. Even if we are able to initiate final design and begin construction of the plant in early 1984, the first half of the plant will not become operational until early 1988. The final design, site preparation, civil, mechanical and electrical work will take approximately four years to complete. Following check out of this facility, the second half of the plant will not come on line until late 1991 or early 1992, if initiated in 1989. Therefore, the complete Solar-100 plant will take approximately eight years to bring on line, from the beginning of the final design and construction to the placing in service of the last of the 10,000 heliostats and other associated equipment.

The legislation before you today would allow us to receive the energy tax credits for energy property placed in service



SOLAR 100 PROGRAM SUMMARY SCHEDULE (FIRST PLANT)

prior to the end of 1992 if we otherwise comply with the requirements specified in this bill. The schedule for completion of the Solar-100 project demonstrates the importance of extending the availablity of the energy tax credit in order to allow investors in this project to receive the benefits of the credit.

PROJECT REVENUE IMPACT

The project costs to build this commercial demonstration plant are going to be in the hundreds of millions of dollars. SCE has told us that it would buy energy from an independent power producer which would own the plant, rather than own the entire plant itself. Hence, the required capital investment must come from non-utility sources like ourselves if the project is to go forward.

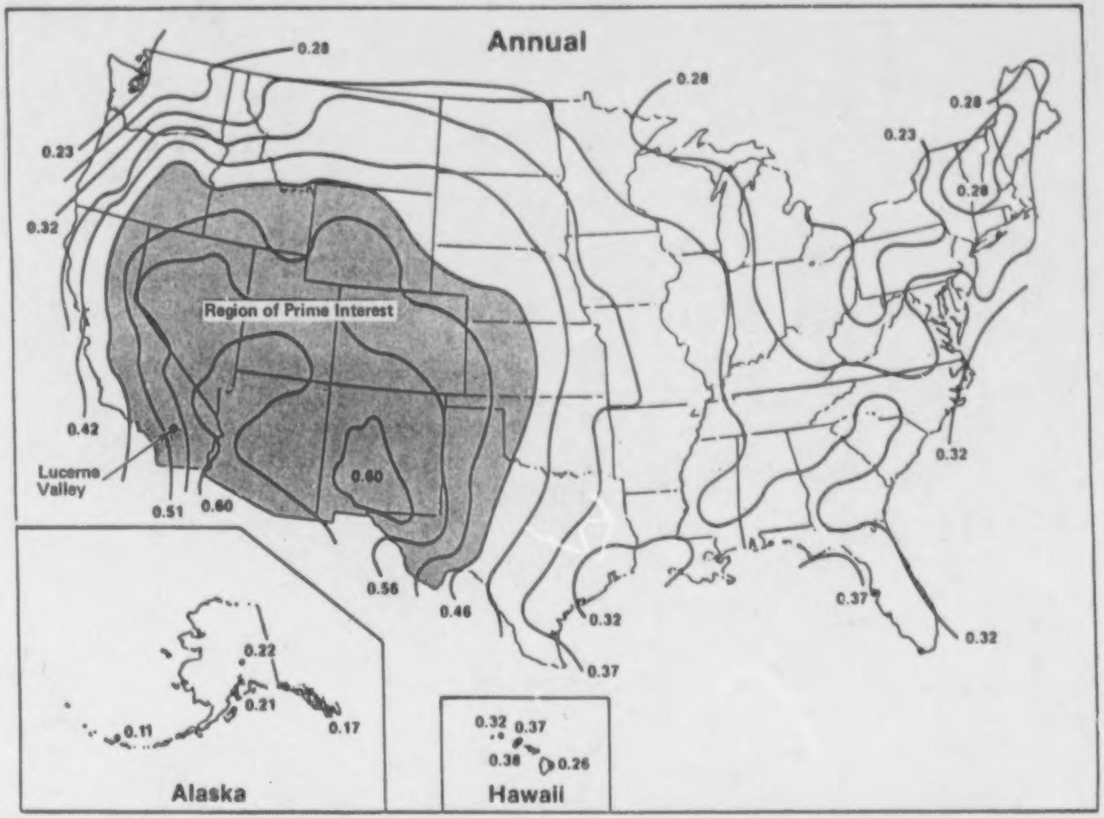
We estimate that over the eight-year construction life of the full Solar-100 Project, there will be approximately $80 million in energy tax credits available to project sponsors. We also estimate that there will be tax revenues generated to the Treasury, both during this construction period and over the 30-year life of the plant, of between $800 million and $2.5 billion. At $30 a barrel, this solar plant will displace the need to import $24 million worth of foreign oil a year into the United States.

The energy tax credits would appear to us to be a worthwhile investment by the Congress to foster this technology. The returns to the U.S. Treasury over the life of the project are far greater than the amount of the credits. Without the credits, our analysis shows that returns to project participants are reduced by 32% and funding and credit support levels will be increased by 20%. This makes the funding of the project unacceptable to ourselves and others who would like to go forward with us. Additionally, without the credits, the payback period is an unacceptably long 17 years.

PROSPECTS FOR COMMERCIAL DEPLOYMENT OF THIS TECHNOLOGY

If this project proves to be a commercial success, we believe that we could build as many as six plants by the year 2002, and 35 plants in California alone by the year 2020. In order for the Committee to appreciate where other future plants may be sited, we are attaching a solar insolation map. This map identifies the regions of prime interest for utilization of solar central receiver technology. Stretching from Texas in the East to California in the west and as far north as the southern half of Idaho and Wyoming, there are vast quantities of available land and sunlight for development of solar central receiver electric generating plants throughout the western United States.

Attachment 1


Annual
0.28
0.28
0.28
0.23
0.28
0.23
0.32
Region of Prime Interest
0.42
Lucerne Valley
0.51
0.60
0.60
0.56
0.46
0.32
0.37
0.37
0.32
0.32
0.22
0.21
0.11
0.17
Alaska
0.32
0.37
0.38
0.26
Hawaii

Yearly Average Direct Normal Irradiance I (in kW/m²) During Daylight Hours for the United States.

Reference: SERI/TR-631-716

JOB IMPACT

The jobs created by the development and deployment of this technology are not limited to the Lucerne Valley site. I have attached an abbreviated list of the potential industrial and engineering firms which may be involved with us in the design and construction of this project. Over 400 firms, both large and small, are potential suppliers of goods and services to this project and, although the project will be located in California, these firms are located throughout the United States.

In terms of jobs in plant operations and the manufacturing and construction sectors of the economy directly related to the project, we estimate that the first plant will result in 6700 man-years of employment. If this technology proves commercially viable, we will have created an industry employing thousands of U.S. workers well into the 21st century. Instead of importing foreign oil, this project will result in the employment of hundreds, if not thousands, of U.S. workers to help make our nation become self-sufficient in its energy needs.

FOREIGN COMPETITION

There are six operating central receiver solar facilities in the world today. The list is as follows:

VGC770N-1

JOBS RESULT FROM A NEW TAX-PAYING, EXPORTING INDUSTRY BENEFITING MANY STATES

PRODUCT	APPROXIMATE DOLLAR VALUE (1983 10^6 $)	POTENTIAL U. S. SUPPLIERS	SUPPLIER LOCATION
HELIOSTATS			
LAMINATE MIRRORS	20	BINSWANGER	CHANDLER, AZ
		BUCHMIN INDUSTRIES	REEDLEY, CA
ROLL FORMED BEAMS	12	VAN HUFFEL TUBE	WARREN, OH
		BINKLEY	WARRENTON, MO
MAIN BEAM	6	WESTERN GEAR	EVERETT, WA
DRIVE HOUSING	6		
PEDESTAL	4	ACE BUHLER	ANAHEIM, CA
LINEAR ACTUATORS	9	DUFF-NORTON	CHARLOTTE, NC
HARMONIC DRIVE	15	USM CORP	WAKEFIELD, MA
HELICAL GEAR SET	1	ILLINOIS TOOL WORKS	CHICAGO, IL
MOTORS	3	EMERSON ELECTRIC	ST. LOUIS, MO
BEARINGS/BUSHINGS	–	McGILL	VALPARAISO, IN
MICRO PROCESSOR	–	SARGENT INDUSTRIES	BURBANK, CA
CONTROLLER COMPONENTS	–	DIVERSE CANDIDATES	
FACTORY EQUIPMENT	8	ITT CANNON	SANTA ANA, CA
		F. JOS. LAMB CO.	WARREN, MI
		DOLLAR ELECTRIC	MADISON HEIGHTS, MI
ASSEMBLY	82	McDONNELL DOUGLAS	SOUTHGATE/LUCERNE VALLEY, CA
RECEIVER	35	FOSTER WHEELER	DANSVILLE, NY
		ROCKETDYNE	CANOGA PARK, CA
STEAM GENERATOR	9	FOSTER WHEELER	MOUNTAINTOP, PA
		BABCOCK & WILCOX	BARBERTON, OH
PLANT CONTROLS			
COMPUTERS	0.5	DIGITAL EQUIPMENT	BOSTON, MA
		MODCOMP	FT. LAUDERDALE, FL
		HEWLITT PACKARD	PALO ALTO, CA
PROCESS CONTROL	5	BECKMAN	FULLERTON, CA
		LEEDS & NORTHRUP	NORTH WALES, PA
		FORNEY	HOUSTON, TX
		FOXBORO	FOXBORO, MA
SALT TANKS	10	PITTSBURGH DES MOINES	PITTSBURGH, PA
$KNO_3/NaNO_3$ SALT	25	VERTAC CHEMICAL	VICKSBURG, MI
		OLIN CHEMICAL	LAKE CHARLES, LA
SALT M. .KEUP SYSTEM	3	OLIN CHEMICAL	STAMFORD, CT
TURBINE	12	GENERAL ELECTRIC	LYNN, MA
OTHER PROCESS EQUIPMENT	33	DIVERSE CANDIDATES	
CONSTRUCTION MATERIALS AND EQUIPMENT	81	DIVERSE CANDIDATES	

OPERATING CR SOLAR FACILITIES

Central Receivers	Size MWe	Operational
Barstow Solar One	10	4/82
ARCO Enhanced Oil Recovery	1	1982
IEA, Almeria, Spain	0.5	9/81
Sunshine Project, Japan	1	9/81
Eurelios, Italy	1	6/81
Themis, France	2.5	8/82

As you can see, many of our foreign allies and trading partners are actively engaged in the development of this technology. I am certain that the Committee will find that our foreign competitors are receiving significant governmental assistance in their efforts. As of today, with the assistance and foresight of the Congress and the Department of Energy, we are the world's leader in developing solar thermal energy. To maintain this lead and open up opportunities to compete effectively against foreign competition in world markets for the sale of these powerplants, we need to commercialize this technology as quickly as possible. We cannot afford to delay or cancel the initiation of promising projects, such as Solar-100, by reason of the expiration of the energy tax credits.

RISKS AND BENEFITS ATTENDING THE DEVELOPMENT OF SOLAR THERMAL TECHNOLOGY

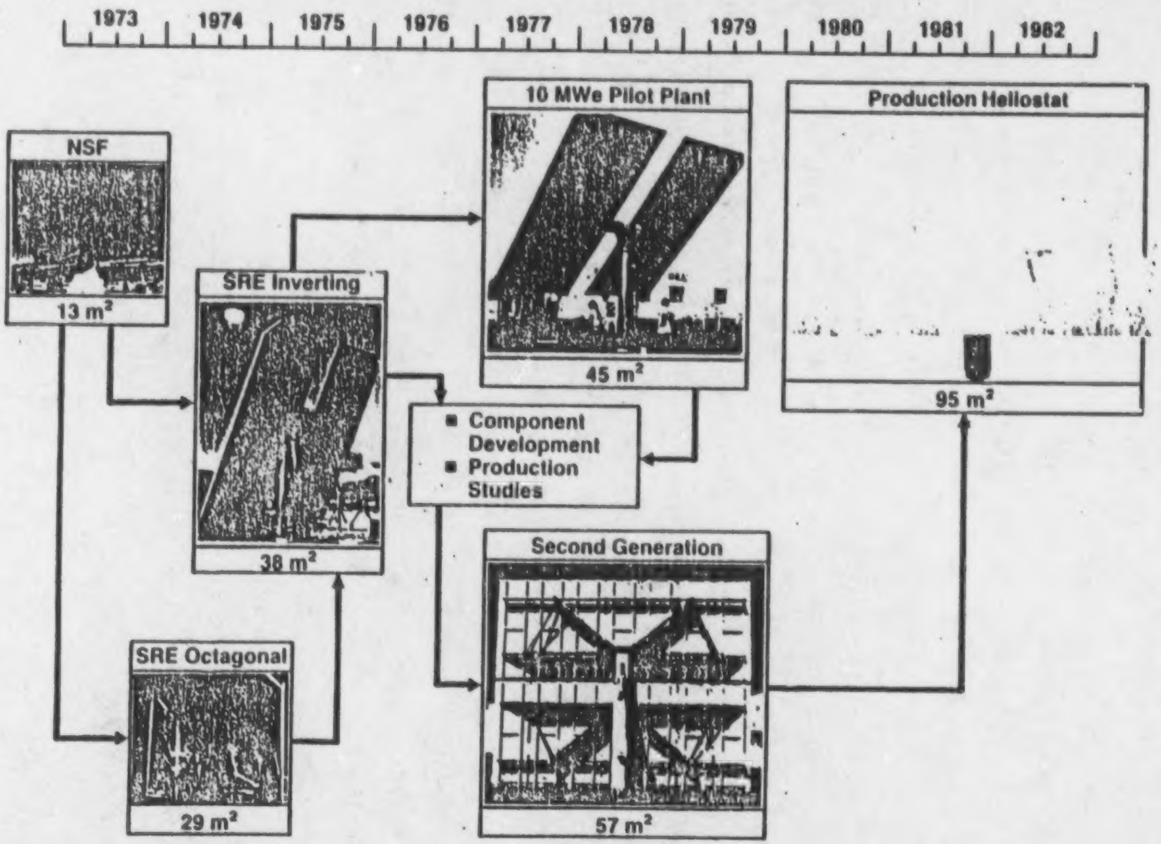
I think it is important for the Committee to understand the nature of the risks and benefits involved in developing this technology on a commercial basis. To date, the Federal government has invested more than $140 million in Solar-One to prove the technical feasibility of the basic design for solar central receiver power plants. To move from this research and development phase to the commercial demonstration phase, some additional large scale subsystem development is required.

The thermal storage system in a solar central receiver plant must have the capability of efficiently storing heat energy. In our proposal to SCE for Solar-100, we have designed a molten salt energy transfer and heat storage system which would allow approximately 8 hours of energy to be stored. This would permit the power plant to operate at night and during cloud transients, without significant losses in efficiency. It would also allow excess energy to be stored for later use by the power plant.

Additionally, the heliostats or computer-controlled, sun-tracking mirrors will be dramatically enlarged to achieve commercial scale economics. Research and development in heliostat technology has taken place over more than ten years, starting with 13 square meter mirrors pioneered by McDonnell Douglas for the National Science Foundation. For these reasons

MDC HELIOSTAT DEVELOPMENT

VFU807N-1



1973 1974 1975 1976 1977 1978 1979 1980 1981 1982

NSF
13 m²

SRE Inverting
38 m²

SRE Octagonal
29 m²

10 MWe Pilot Plant
45 m²

- Component Development
- Production Studies

Second Generation
57 m²

Production Heliostat
95 m²

and many others, Solar-100 is able to utilize technology advances, but it also involves technical risks. We are optimistic, however, that they can be dealt with successfully.

Our desire to participate in this project and assist in the commercialization of this technology stems from our belief that solar thermal technology can be an economically competitive energy source for the nation's utilities in the decades ahead. Jobs are created for U.S. workers, and foreign oil displaced, thereby improving our balance of payments. Significant environmental benefits are achieved through deployment of the non-polluting, clean source of electric power generation. In that no combustion process is involved, there is no air or water pollution or residual solid wastes disposition concerns.

We would prefer to be solar power plant suppliers as opposed to owners and operators of solar power plants, but we recognize that to commercialize this technology and make purchases of these plants acceptable to utility planners, we have to take significant risks on this first commercial demonstration plant. McDonnell Douglas and other industrial concerns are willing to invest significant funds in developing this technology. We cannot afford to do so without the availability of the energy tax credits.

CONCLUSION

The solar central receiver technology which McDonnell Douglas and others are trying to develop is a first of its kind, high risk, high initial cost technology which, if demonstrated, will provide significant benefits to the U.S. economy. Because of the low return on investment and the long pay back period, funding by disinterested third parties is not available and the funds and credit support required for the project must come from project participants who stand to benefit if the technology meets performance specifications and utilities become willing to purchase future solar thermal plants. The willingness and ability of participants to proceed is stretched to the limit with the energy tax credit available -- without the energy tax credit, this project will not go forward.

We urge the Committee to favorably consider this legislation and urge its enactment by the Congress in the immediate future. Without its enactment, we cannot proceed.

I appreciate this opportunity to present the views of McDonnell Douglas and would be happy to answer any questions the Committee may have.

STATEMENT OF CAREL OTTE, PRESIDENT, GEOTHERMAL DIVISION, UNION OIL CO. OF CALIFORNIA, WASHINGTON, D.C.

Dr. Otte. Mr. Chairman, I am appearing here on behalf of the geothermal industry. I am the sole witness.

My name is Carel Otte. I am president of the Geothermal Division of the Union Oil Co. of California, and I have been working on the development of geothermal resources for the last 20 years both in the United States and abroad. At present, Union Oil Co. is one of the prominent producers of the resource.

I have a prepared statement, which I will not read to you, and it is available to the staff and will be introduced for the record.

We are here to appear in support of the legislation. I would like to make some observations and hope to digest my statement.

First of all, Mr. Chairman, I would like to step back and look at the purpose of energy tax credits in general and then this legislation in particular, and review it kind of on philosophical grounds.

The way we interpret the legislation to mean is this: The energy tax credits were provided by Congress as an incentive to help alternative technologies to get started by industry spending its own money—not Government grants; its own money, and this statement is in response to the previous witness from the Environmental Policy Group—to get started in competition with more established technologies like the well-known oil and gas industries.

At the same time, while giving these energy tax credits, Congress limited the period of time to develop this technology, and really signaled to the industry, "You had then better meet the competition of the marketplace. We do not wish to give you a permanent advantage and a permanent crutch." This is why there was an expiration date.

Now, we in the geothermal industry accept this concept and this challenge, and we appear in support of S. 1396.

Now, on behalf of the geothermal industry, I want to point out certain facts pertinent to geothermal that may have been overlooked.

With biomass, wind, and solar, with which geothermal is linked in this legislation, the resource is known, identified, and quantified. The hurdle dates of December 1985 for permitting and January 1988 to order equipment are established, in my estimate, to act as an incentive, or a "prod," if I may call it, for the industry to get on with the job.

In the geothermal industry we have a slightly different situation. We have to go through an extensive and costly exploration process to discover, define, and quantify the resources. Then we go through the permitting and equipment ordering phases in which the legislation is intended.

Now, this exploration phase takes several years or more. And then the resource may support many powerplants, but a utility company can only permit the powerplants one at a time and the construction period will extend beyond the period that investment tax credits will be available.

Now, in addition to that, at the present time with the oil glut the utilities are flush with generation, and we have temporarily lost our market. We feel, however, that this will restore itself by the late eighties.

It is then for this reason that we ask for a minor modification, which is either the removal of the restrictive hurdle dates or, if this is not practicable, a 2-year slippage from December 1985 to December 1988, and for the equipment ordering phase to January 1990 in order to allow us to completely develop our technologies. It is following the exploration and development phases that we really get into the equipment-ordering phases.

As a final note, I want to say that we and the Edison Co. in the Imperial Valley of California have been engaged since 1980 on two pilot plants. The Union Oil Co. alone has spent $100 million out of its own pocket We have almost identified the resource; we have not yet completely developed the technologies, but we see daylight at the end of the tunnel. On the $100 million of investment, the investment tax credits that were received were $4 million, which is a minor amount. And the reason is that the expenditures so far have been primarily for exploration and other expense items that do not qualify. It is only later on when one gets into the heavy equipment ordering phase and the installation and construction phase that investment tax credit becomes effective. It is vital that this is available. And I feel that in the late eighties, once the utilities will commence further construction of their powerplants and begin expansion of their systems, I feel that it is very vital that we have the investment tax credits when we put this technology in place so that we can compete with the other well-established technologies.

Thank you, Mr. Chairman.

Senator WALLOP. Thank you, Dr. Otte.

[The prepared statement of Carel Otte and a letter from Thomas F. Hairston follow:]

STATEMENT OF CAREL OTTE
PRESIDENT, UNION GEOTHERMAL DIVISION
UNION OIL COMPANY OF CALIFORNIA
BEFORE THE
SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION
OF THE SENATE FINANCE COMMITTEE
U. S. SENATE
WASHINGTON, D. C.
JUNE 17, 1983

My name is Carel Otte. I am President of the Geothermal Division of the Union Oil Company of California. I have been actively engaged in geothermal work since 1962, and have personally participated in research and operating activities in most of the major geothermal areas of the nation and also overseas.

I am appearing in support of S.1396, introduced by Mr. Domenici and others, which provides for extension of the energy tax credit beyond the present expiration date of December 31, 1985 to December 31, 1992 for certain energy projects, including geothermal energy projects.

While we heartily endorse this proposal and urge its adoption, the bill in its present form contains two restrictions which will severely limit the impact of the extension on future geothermal development in this country.

The two restrictions are, first, the requirement that all permits be applied for prior to December 31, 1985 and second, the requirement that 50% of the equipment for the project be firmly committed to prior to January 1, 1988.

As a first recommendation, we would suggest complete removal of the two restrictions mentioned above. If this is not practicable, we would as an alternative urge a slippage of two years on both restrictions. Adoption of either suggestion would strengthen the effectiveness of S.1396. Specific language to accomplish these changes will be provided to your staff for consideration.

Now I would like to briefly mention the importance of energy tax credits to the geothermal industry and the reasons why these changes are needed. Unlike coal, shale, wind, solar etc., geothermal developments must be preceeded by costly and time consuming exploratory efforts just to locate the resource and to determine its characteristics. Once the producing potential of the resource is confirmed, contract negotiations with a utility company must be largely concluded and environmental studies completed before required governmental permits can be applied for. The permitting process is further complicated by the fact that the utility must also obtain various permits and approvals for their phase of the operation. One reason geothermal is attractive to utility companies is that capacity can be added in 100 MW increments rather than 1000 MW all at once, as is the case for a nuclear or coal plant. But, while a resource may be capable of supporting a number of power plants, adding up to 1000 MW or more, permits for only one plant would be applied for at any one time. Because of factors such as these, geothermal needs more latitude in meeting the commitment requirements presently in S.1396.

Geothermal is still a fledgling industry faced with a variety of technical and institutional problems which are unique to geothermal. As a result, only a few of the nations geothermal resources can presently be developed and produced in competition with established energy technologies.

I wish to illustrate the industry's problems by relating the status of developments in one geothermal provence, the Imperial Valley of California. There are estimates of a huge resource potential in the Valley ranging from 5000 to 10,000 MW of generating capacity. If fully developed, this could displace more than 100 million barrels per year of imported fuel oil. This is why the area has been coined the "Saudi Arabia of the geothermal industry."

Even so, the Imperial Valley geothermal brines presently cannot be produced on an economic basis. The brines from the Imperial Valley are extremely saline, causing extensive scaling and rapid corrosion of wells, pipelines and other equipment used to produce the hot fluids.

Union Oil Company first attempted in 1962 to produce these brines, but it wasn't until 1980 that the company succeeded in supplying Imperial Valley geothermal steam on a commercial basis. This was to a small 10 MW generating plant constructed by Southern California Edison Co. near the town of Brawley. This was followed by start-up of a second 10 MW plant in the Salton Sea area of the Imperial Valley in July 1982. These plants are primarily R & D facilities designed to test various aspects of handling the concentrated brines on a commercial basis, and will serve as prototypes of larger plants.

Even so, these represent costly endeavors. Through start-up of the Salton Sea plant, Union has spent more than $100 million dollars in its exploration, development and testing efforts in the Imperial Valley. Union's partners in the Salton Sea, along with other operators in the Imperial Valley including Magma Power Company, Chevron Resources, Phillips, Occidental, Republic Geothermal and others have likewise spent substantial sums of money.

The energy tax credits which accrued to Union from its work have amounted to less than $4 million. It would have been considerably more, except that the expenditures to date have been largely for exploratory drilling, testing and other expense items which do not attract tax credits. As the industry emerges from the present R & D phase into a full development phase, tax credits will take on much greater significance and in fact will likely dictate the pace and scope of development in the Valley.

I believe the energy credit has been serving the purpose for which it was intended - it has stimulated the private sector to move forward in efforts to unlock domestic energy sources. But the job will be far from complete on December 31, 1985 when the present energy credit legislation expires. Technical problems still loom large in the Imperial Valley, and the current softness in crude oil prices worldwide has only exacerbated the problem of marketing geothermal energy to a utility industry which is momentarily flush with generating capacity.

We believe that this situation is only temporary and that before the end of the decade developable geothermal resources will be viewed as vital to the energy mixes of utility companies which have such resources in or near their service areas. Union and others are prepared to continue their efforts to make geothermal a meaningful part of the nation's energy supply, but the continuation of the energy credit is essential for an uninterrupted development effort.

Today we are really developing and perfecting the technology for five years hence, so that large scale commercial developments can commence in the late 80's and beyond. The next 5 to 10 years are important to the geothermal industry because it is the time when the technology is expected to be proved for the large, commercial plants of the future in the Imperial Valley and elsewhere. It is also the time when credits would be of great assistance. This is why we request the simple but vital modifications to S.1396 mentioned above.

Union Oil Company of California

union 76

June 22, 1983

TO: Roderick A. De Arment, Chief Counsel

Tom

FROM: Thomas F. Hairston

SUBJECT: S. 1396; Recommended Changes Re: Geothermal Energy

In his testimony last Friday regarding S. 1396, Dr. Otte stated that a longer period of time (two additional years) was needed for geothermal energy projects to be benefited by the energy investment tax credit. Also, he stated a copy of the recommended changes would be provided staff for inclusion in the record.

Attached are copies of proposed changes with respect to geothermal. Proposal 1 would simply extend the existing geothermal credit to December 31, 1992. Proposal 2 would extend the affirmative committment language in the present S. 1396 for two more years. The recommended changes are underlined in blue and inserted into a copy of section 2 of S. 1396.

If you think appropriate, it is requested that a copy of the recommended changes be inserted in the hearing record on S. 1396.

TFH/ms

Enclosure

PROPOSAL 1

Proposed amendment to Sec. 2 of S.1396
to extend energy percentage for geothermal
property to December 31, 1992

SEC. 2. AFFIRMATIVE COMMITMENTS FOR SOLAR, WIND, ~~GEO-THERMAL~~, AND BIOMASS ENERGY PROPERTY, AND EXTENSION OF ENERGY PERCENTAGE FOR GEOTHERMAL ENERGY PROPERTY

(a) Subparagraph (C) of section 46(a)(2) (relating to energy percentage) is amended by redesignating clause (iv) as clause (v) and by inserting the following:

"(iv) LONGER PERIOD FOR CERTAIN PROJECTS.—For the purpose of applying the energy percentage contained in subclause (II) (other than property described in section 48(l)(3)(A)(iii)) or (VI) of clause (i) with respect to any property which is part of a project, 'December 31, 1992' shall be substituted for 'December 31, 1985' if—

"(I) on or before January 1, 1986, the taxpayer or any other person has completed all feasibility studies in connection with the commencement of the construction of the project, and has applied for all environmental and construction permits required under Federal, State, or local law in connection with the commencement of the construction of the project, and

"(II) on or before January 1, 1988, the taxpayer has entered into binding contracts for the acquisition, construction, reconstruction, or erection of (A) equipment for the project, the aggregate cost of which to the taxpayer is at least 50 percent of the reasonably estimated cost for all equipment which is to be placed in service as part of the project upon its completion, or (B) equipment specially designed for the project, the aggregate cost of which to the taxpayer of that equipment is at least 50 percent of the reasonably estimated cost for all such equipment specially designed for the project which is to be placed in service as part of the project upon its completion.".

(b) Subclause (II) of clause (i) of section 46(a)(2)(C) is amended to read:

"II. SOLAR, WIND, OR GEOTHERMAL PROPERTY. - Property described in section 48(1)(2)(A)(ii) ...	A. 10 percent	Oct.1,1978	Dec.31,1979
	B. 15 percent	Jan.1,1980	Dec.31,1985
Property described in section 48(1)(3)(A)(viii) ...	A. 10 percent	Oct.1,1978	Dec.31,1979
	B. 15 percent	Jan.1,1980	Dec.31,1992"

PROPOSAL 2

Proposed amendment to Sec. 2 of S.1396 to change the dates of January 1, 1986 (contained in subclause (I)) and January 1, 1988 (contained in subclause (II)) to January 1, 1988 and January 1, 1990, respectively, as applied to geothermal property.

SEC. 2. AFFIRMATIVE COMMITMENTS FOR SOLAR, WIND, GEOTHERMAL, AND BIOMASS ENERGY PROPERTY.

Subparagraph (C) of section 46(a)(2) (relating to energy percentage) is amended by redesignating clause (iv) as clause (v) and by inserting the following:

"(iv) LONGER PERIOD FOR CERTAIN PROJECTS.—For the purpose of applying the energy percentage contained in subclause (II) (other than property described in section 48(l)(3)(A)(iii)) or (VI) of clause (i) with respect to any property which is part of a project, 'December 31, 1992' shall be substituted for 'December 31, 1985' if—

"(I) on or before January 1, 1986, the taxpayer or any other person has completed all feasibility studies in connection with the commencement of the construction of the project, and has applied for all environmental and construction permits required under Federal, State, or local law in connection with the commencement of the construction of the project, and

"(II) on or before January 1, 1988, the taxpayer has entered into binding contracts for the acquisition, construction, reconstruction, or erection of (A) equipment for the project, the aggregate cost of which to the taxpayer is at least 50 percent of the reasonably estimated cost for all equipment which is to be placed in service as part of the project upon its completion, or (B) equipment specially designed for the project, the aggregate cost of which to the taxpayer of that equipment is at least 50 percent of the reasonably estimated cost for all such equipment specially designed for the project which is to be placed in service as part of the project upon its completion.".

In the case of a project which includes property described in section 48(l)(3)(A)(iii), the preceding sentence shall apply except that 'January 1, 1988' shall be substituted for 'January 1, 1986' in subclause (I), and January 1, 1990' shall be substituted for 'January 1, 1988' in subclause (II)."

STATEMENT OF MARK RIEDY OF SPRIGGS, BODE & HOLLINGSWORTH, WASHINGTON, D.C., ON BEHALF OF THE ENERGY CYCLE, INC., LINCOLN, NEBR.

Mr. **Riedy**. Thank you, Mr. Chairman.

I am Mark J. Riedy, counsel to Energy Cycle, Inc., headquartered in Lincoln, Nebr., and an attorney in the Spriggs, Bode & Hollingsworth, of Washington, D.C., law firm.

I am delivering this brief testimony concerning S. 1396 on behalf of former Senator Carl T. Curtis, a current board member of Energy Cycle, Inc.

Energy Cycle, Inc., is one of the few U.S. companies recycling nonfossil organic waste into energy and valuable coproducts through a process of anaerobic digestion. With its patented anaerobic digestion system, Energy Cycle, Inc., biologically ferments these wastes in airtight biomass energy equipment to produce biogas. In turn, this biogas, a bacterial creation of approximately 60-percent methane and 40-percent carbon-dioxide-containing gas is converted into fuel or electricity. Unlike natural gas, which is nonrenewable, methane is a particularly valuable alternate energy source because it is renewable and because, on the basis of Btu content, it is an approximate substitute for natural gas.

We welcome this opportunity to present to this distinguished Senate panel our views supporting in concept the extension of the qualification period for the utilization of the 10-percent energy investment tax credit for biomass energy property proposed in S. 1396.

The anaerobic digestion industry primarily generates revenues through two principal industry segments: One, the agricultural market, and two, the municipal market.

In the agricultural market, anaerobic digester systems are utilized in the treatment of animal waste and food processing residues. The potential market primarily includes dairy, beef, poultry, swine, cheese whey, and cannery operations. Presently, this market segment includes only 13 companies commercially marketing methane digesters. From the design and construction of digester systems for this market segment, we estimate that 1982 sales approached $3.7 million while 1990 sales could amount to over $235.35 million.

In the municipal market, anaerobic digestion systems already are prevalent in the treatment of human waste. These systems convert septic tank wastes into a commercially saleable fertilizer product. Presently, only one company controls the commercial marketing of anaerobic digesters for municipalities. From the design and construction of digester systems for this market segment, we estimate that 1982 sales approached $2 million, while 1990 sales could exceed $300 million.

To grow beyond the current modest sales levels for and to promote competition within the anaerobic digestion industry, this industry must be accorded energy investment tax credits.

Congress has committed itself to the development of renewable energy sources through incentive-based legislation to insure a strong and continued independent base of energy for the United States.

The anaerobic digestion industry, in its recycling of nonfossil organic wastes into renewable alternate energy, clearly falls within the intended scope of this commitment.

Energy Cycle, Inc., supports the concept advanced in this proposed legislation; nevertheless, we believe that S. 1396 is much too narrow in scope in its treatment of biomass property. In its present form, with its single clause for biomass property and affirmative commitments provision, the bill does not go as far as it should toward promoting the public policy goals of encouraging the broadest possible promotion of alternate energy sources. Specifically, we recommend that the bill include energy investment tax incentives for the anaerobic digestion industry and extend those incentives beyond the December 31, 1985, termination date for qualified biomass property.

As detailed in the formal statement that we have provided to the subcommittee for inclusion in the record of these hearings, the legislative history associated with the Energy Tax Act of 1978 and with the Windfall Profits Tax Act of 1980 contemplated that the anaerobic digester industry would be accorded a 10-percent energy investment tax credit as qualified biomass property. Through inadvertence, however, the language of the legislative proposals enacted in the context of the legislative history did not expressly include anaerobic digester equipment, and such equipment has been interpreted not to be eligible for those credits.

Unfortunately, in its current form S. 1396 does not remove the confusion that surrounds the energy investment tax credit status of the anaerobic digestion equipment.

During the last Congress several bills, most notably S. 2766 and H.R. 6131, would have cured that problem. Those proposals, however, did not pass because of the press of other events in the closing days of the 97th Congress. In this Congress, at least three measures have been introduced in slightly different ways which would accord to the anaerobic digester equipment the energy investment tax credit position Congress has long intended for it. They are H.R. 1876, H.R. 3072, and S. 1305.

This subcommittee today has a special opportunity to enthusiastically confirm the clear and longstanding congressional intent to qualify anaerobic digestion equipment for the 10-percent energy tax credit and thus promote the production and development of this critical alternate energy source. It can include qualifying language in S. 1396, or support S. 1305, or H.R. 3072, to accomplish this important result.

A taxpayer engaged in agriculture usually must secure third-party financing in order to install an anaerobic digester system. The application of energy credit to this system makes third-party financing possible. Without the credit, this alternate energy source will not be utilized to any great extent.

The short-term effect on Government revenues through the use of these credits by the anaerobic digestion industry will be minimal. The availability of these energy credits for anaerobic digestion systems will encourage strong investment into the industry; thus, investment-generated industry sales will provide increasingly sizable long-term taxable income for the Government's coffers.

The economic, environmental, and political significance of the anaerobic digestion industry to the citizens of the United States argues in favor of our recommended changes in S. 1396.

Thank you.

Senator WALLOP. Thank you, Mr. Riedy.

[The prepared statement of Hon. Carl F. Curtis and Mark J. Riedy follows:]

TESTIMONY OF THE HONORABLE CARL T. CURTIS, MEMBER, BOARD OF DIRECTORS, ENERGY CYCLE, INC., BEFORE THE SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION, COMMITTEE ON FINANCE, UNITED STATES SENATE

JUNE 17, 1983

THE HONORABLE CARL T. CURTIS
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TESTIMONY OF THE HONORABLE CARL T. CURTIS, MEMBER, BOARD OF DIRECTORS, ENERGY CYCLE, INC., BEFORE THE SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION, COMMITTEE ON FINANCE, UNITED STATES SENATE, ON S. 1396

JUNE 17, 1983

I. INTRODUCTION

GOOD MORNING. MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE, I AM MARK J. RIEDY, COUNSEL TO ENERGY CYCLE, INC., HEADQUARTERED IN LINCOLN, NEBRASKA, AND AN ATTORNEY IN SPRIGGS, BODE & HOLLINGSWORTH, A WASHINGTON, D.C. LAW FIRM. I AM DELIVERING THIS BRIEF TESTIMONY CONCERNING S. 1396, ENTITLED THE "ENERGY SECURITY TAX INCENTIVES ACT OF 1983," ON BEHALF OF THE HONORABLE CARL T. CURTIS, A FORMER SENATOR, LONG-STANDING MEMBER OF YOUR DISTINGUISHED PARENT COMMITTEE AND CURRENT BOARD MEMBER OF ENERGY CYCLE, INC. DUE TO EXTENUATING CIRCUMSTANCES, SENATOR CURTIS REQUESTED THAT I DELIVER HIS TESTIMONY ON BEHALF OF THE COMPANY TODAY.

ENERGY CYCLE, INC. IS ONE OF FEW U.S. COMPANIES RECYCLING NONFOSSIL ORGANIC WASTES INTO ENERGY AND VALUABLE CO-PRODUCTS THROUGH A PROCESS OF ANAEROBIC DIGESTION. WITH ITS PATENTED ANAEROBIC DIGESTION SYSTEM, ENERGY CYCLE, INC. BIOLOGICALLY FERMENTS THESE WASTES IN AIRTIGHT BIOMASS

ENERGY EQUIPMENT TO PRODUCE BIOGAS. IN TURN, THIS BIOGAS, A BACTERIAL CREATION OF APPROXIMATELY 60 PERCENT METHANE-AND 40 PERCENT CARBON DIOXIDE-CONTAINING GAS IS CONVERTED INTO FUEL OR ELECTRICITY. UNLIKE NATURAL GAS, WHICH IS NON-RENEWABLE, METHANE IS A PARTICULARLY VALUABLE ALTERNATE ENERGY SOURCE BECAUSE IT IS RENEWABLE AND BECAUSE, ON THE BASIS OF BTU CONTENT, IT IS AN APPROXIMATE SUBSTITUTE FOR NATURAL GAS.

II. POSITION

A. STATUS OF THE ANAEROBIC DIGESTION INDUSTRY

WE WELCOME THIS OPPORTUNITY TO PRESENT TO THIS DISTINGUISHED SENATE PANEL OUR VIEWS, SUPPORTING IN CONCEPT THE EXTENSION OF THE QUALIFICATION PERIOD FOR THE UTILIZATION OF THE 10 PERCENT ENERGY INVESTMENT TAX CREDIT FOR BIOMASS ENERGY PROPERTY PROPOSED IN S. 1396. BEFORE DISCUSSING THE BREADTH OF THIS BILL AND ITS IMPACT ON ANAEROBIC DIGESTION, WE WILL HIGHLIGHT THE PRESENT AND PROJECTED STATUS OF THIS INDUSTRY.

1. THE AGRICULTURAL AND MUNICIPAL MARKETS

THE ANAEROBIC DIGESTION INDUSTRY PRIMARILY GENERATES REVENUES THROUGH TWO PRINCIPAL INDUSTRY SEGMENTS: 1) THE AGRICULTURAL MARKET AND 2) THE MUNICIPAL MARKET.

IN THE AGRICULTURAL MARKET, ANAEROBIC DIGESTER SYSTEMS ARE UTILIZED IN THE TREATMENT OF ANIMAL WASTE AND FOOD PROCESSING RESIDUES. THE POTENTIAL MARKET PRIMARILY INCLUDES DAIRY, BEEF, POULTRY, SWINE, CHEESE WHEY, AND CANNERY OPERATIONS. PRESENTLY, THIS MARKET SEGMENT INCLUDES ONLY THIRTEEN COMPANIES COMMERCIALLY MARKETING METHANE DIGESTERS. FROM THE DESIGN AND CONSTRUCTION OF DIGESTER SYSTEMS FOR THIS MARKET SEGMENT, WE ESTIMATE THAT 1982 SALES APPROACHED $3.7 MILLION WHILE 1990 SALES COULD AMOUNT TO OVER $235.35 MILLION.

IN THE MUNICIPAL MARKET, ANAEROBIC DIGESTION SYSTEMS ALREADY ARE PREVALENT IN THE TREATMENT OF HUMAN WASTE. THESE SYSTEMS CONVERT SEPTIC TANK WASTES INTO A COMMERCIALLY SALEABLE FERTILIZER PRODUCT. PRESENTLY, ONLY ONE COMPANY CONTROLS THE COMMERCIAL MARKETING OF ANAEROBIC DIGESTERS FOR MUNICIPALITIES. FROM THE DESIGN AND CONSTRUCTION OF DIGESTER SYSTEMS FOR THIS MARKET SEGMENT, WE ESTIMATE THAT 1982 SALES APPROACHED $2 MILLION WHILE 1990 SALES COULD EXCEED $300 MILLION.

TO GROW BEYOND THE CURRENT MODEST SALES LEVELS FOR AND TO PROMOTE COMPETITION WITHIN THE AGRICULTURAL AND MUNICIPAL MARKETS, THE ANAEROBIC DIGESTION INDUSTRY MUST BE ACCORDED ENERGY INVESTMENT TAX CREDITS.

IN THE AGRICULTURAL MARKET, THE GROWTH OF THIS INDUSTRY WILL BE SIGNIFICANTLY AFFECTED BY ITS ABILITY TO DEVELOP SYSTEMS THAT ARE ECONOMICALLY VIABLE FOR SMALLER SIZE FARMS. IN ADDITION TO TECHNOLOGICAL IMPROVEMENTS, THE ABILITY TO UTILIZE A 10 PERCENT ENERGY INVESTMENT TAX CREDIT IN THE FIRST YEAR OF A DIGESTER'S OPERATION COULD DETERMINE ITS FEASIBILITY FOR SMALL SCALE FARMS.

IN THE MUNICIPAL MARKET, THE PURCHASERS OF ANAEROBIC DIGESTION SYSTEMS FOR MUNICIPAL WASTE TREATMENT PLANTS OFTEN HAVE BEEN TAX EXEMPT INSTITUTIONS. THUS, THE IMPACT OF AN ENERGY INVESTMENT TAX CREDIT IN THOSE SITUATIONS IS NON-EXISTENT. NEVERTHELESS, IN RECENT YEARS, PRIVATELY OWNED FINANCE PARTNERSHIPS HAVE DEVELOPED TO ASSIST MUNICIPALITIES MEET THEIR GROWING FINANCIAL NEEDS. THE PARTNERSHIPS CONSTRUCT WASTE TREATMENT SYSTEMS WITH PRIVATE SECTOR DOLLARS AND LEASE THEM BACK TO MUNICIPALITIES AT REASONABLE RATES. IN THESE TAX LEASE ARRANGEMENTS, THE PARTNERSHIPS WOULD BENEFIT FROM THE TAX CREDITS AND ACCELERATED DEPRECIATION ALLOWANCES ASSOCIATED WITH SUCH AN INVESTMENT. ON THE OTHER HAND, MUNICIPALITIES WOULD OBTAIN A CONVENIENT SOURCE OF FINANCIAL ASSISTANCE. HERE, THE IMPACT OF AN ENERGY TAX CREDIT ON THESE ARRANGEMENTS WOULD BE SIGNIFICANT.

2. ECONOMIC, ENVIRONMENTAL AND POLITICAL SIGNIFICANCE

THE DEVELOPMENT OF THE ANAEROBIC DIGESTION INDUSTRY CAN PROVIDE SIGNIFICANT BENEFITS TO THE UNITED STATES IN TERMS OF ECONOMIC, ENVIRONMENTAL, AND POLITICAL WELFARE.

ECONOMICALLY, THE GROWTH OF THE INDUSTRY SIGNALS BENEFITS BOTH THROUGH THE REVENUES GENERATED FROM DIGESTER SALES AND THROUGH THE POTENTIAL ECONOMIC SALVATION IT MAY PROVIDE FOR THE HARD HIT AGRICULTURAL SECTOR OF THE ECONOMY. ANAEROBIC DIGESTION MAY PROVIDE AN ADDITIONAL CASH CROP THAT COULD PERMIT SURVIVAL FOR MANY MARGINAL FARM OPERATIONS. ADDITIONALLY, THE CREATION OF NEW EMPLOYMENT OPPORTUNITIES FOR OUR NATION'S HARD PRESSED UNEMPLOYED CITIZENS THROUGH A VIBRANT ANAEROBIC DIGESTION INDUSTRY WOULD DECREASE ECONOMIC SUFFERING AND ENHANCE THE FISCAL VITALITY OF THE UNITED STATES.

ENVIRONMENTALLY, ANAEROBIC DIGESTION PROVIDES BENEFITS THROUGH THE PROPER TREATMENT AND DISPOSAL OF AGRICULTURAL AND MUNICIPAL WASTES. THIS TREATMENT IS ESPECIALLY IMPORTANT FOR OPERATIONS CLOSE TO POPULATION CENTERS OR WATER FACILITIES. IT ELIMINATES NOXIOUS ODORS AND REDUCES THE DANGER OF WATER POLLUTION.

FINALLY, THE POLITICAL IMPLICATIONS OF A VIABLE ANAEROBIC DIGESTION INDUSTRY ARE POTENTIALLY SIGNIFICANT. THE DEGREE TO WHICH OUR AGRICULTURAL SECTOR BECOMES ENERGY SELF-SUFFICIENT MAY WELL GUARANTEE OUR FOOD SUPPLY DURING TIMES OF NATIONAL EMERGENCY IF EXTERNAL ENERGY SOURCES ARE INTERRUPTED OR CUT-OFF.

B. S. 1396

CONGRESS HAS COMMITTED ITSELF TO THE DEVELOPMENT OF RENEWABLE ALTERNATE ENERGY SOURCES THROUGH INCENTIVE-BASED LEGISLATION TO INSURE A STRONG AND CONTINUED INDEPENDENT BASE OF ENERGY FOR THE UNITED STATES. THE ANAEROBIC DIGESTION INDUSTRY, IN ITS RECYCLING OF NONFOSSIL ORGANIC WASTES INTO RENEWABLE ALTERNATE ENERGY, CLEARLY FALLS WITHIN THE INTENDED SCOPE OF THIS COMMITMENT. NEVERTHELESS, THROUGH INADVERTENCE AND DESPITE ITS CLEAR INTENT TO THE CONTRARY, CONGRESS HAS NOT EXPRESSLY ENCOURAGED INVESTMENT INTO THIS INDUSTRY THROUGH ENERGY INVESTMENT TAX INCENTIVE LEGISLATION. THESE CREDITS ARE ESSENTIAL TO THE VITALITY OF THIS NASCENT INDUSTRY. S. 1396 NOTABLY ATTEMPTS TO EXTEND ENERGY TAX INCENTIVES FOR THE BENEFIT OF ALTERNATE ENERGY DEVELOPMENT. YET, ITS EXPRESS LANGUAGE WOULD NOT COVER THE ANAEROBIC DIGESTION INDUSTRY.

S. 1396 WAS INTRODUCED BY SENATOR DOMENICI ON MAY 26, 1983 ALONG WITH SEVEN CO-SPONSORS.[1] AMONG OTHER THINGS, SECTION 2 OF S. 1396 WOULD AMEND SECTION 46(A)(2) OF THE INTERNAL REVENUE CODE OF 1954 (CODE), AS AMENDED, BY PLACING IN THAT PROVISION A NEW "AFFIRMATIVE COMMITMENTS" PROVISION FOR QUALIFYING SOLAR, WIND, GEOTHERMAL, AND BIOMASS RENEWABLE ENERGY PROPERTY.[2] HOWEVER, AS SENATOR DOMENICI EMPHASIZED IN HIS INTRODUCTORY REMARKS, S. 1396 "IS LIMITED IN SCOPE IN THAT IT WOULD SIMPLY PROVIDE AN 'AFFIRMATIVE COMMITMENTS PROVISION' TO THE EXISTING ENERGY TAX CREDITS" FOR THIS SPECIFIC RENEWABLE ENERGY PROPERTY.[3]

SENATOR JACKSON, IN HIS CO-SPONSORING REMARKS, ALSO CAUTIONED THAT "(O)UR LEGISLATION DOES NOT ADDRESS THE NEED TO EXTEND GENERALLY THE DURATION OF THE ENERGY TAX CREDITS NOR DOES IT ADDRESS THE NEED TO INCREASE THE AMOUNT OF THOSE CREDITS."[4] REGARDLESS, IN NOTING HIS SUPPORT FOR THESE CREDIT EXTENSIONS AND INCREASES IN AVAILABLE PERCENTAGE AMOUNTS, SENATOR JACKSON PERCEIVED THE MOST IMMEDIATE NEED ADDRESSED IN S. 1396 IS "TO ASSURE PROJECT SPONSORS THAT TAX CREDITS WILL BE AVAILABLE TO THEM IF THEY PROCEED WITH DUE DILIGENCE IN THE DEVELOPMENT OF THEIR PROJECTS."[5]

AS A RESULT, S. 1396, THROUGH ITS AFFIRMATIVE COMMITMENTS PROVISION, WOULD "EXTEND THE AVAILABILITY OF RENEWABLE ENERGY TAX CREDITS TO DECEMBER 31, 1992, FOR THOSE TAXPAYERS WHO MAKE CERTAIN DEMONSTRABLE COMMITMENTS TO RENEWABLE ENERGY PROJECTS" BY JANUARY 1, 1986 AND JANUARY 1, 1988. THUS, TO DEMONSTRATE THE REQUISITE AFFIRMATIVE COMMITMENTS, A TAXPAYER PROJECT SPONSOR FIRST MUST COMPLETE ALL FEASIBILITY STUDIES AND APPLY FOR ALL ENVIRONMENTAL AND CONSTRUCTION PERMITS BY JANUARY 1, 1986. SECONDLY, A SPONSOR MUST EXECUTE CONTRACTS "FOR AT LEAST 50 PERCENT OF THE REASONABLY ESTIMATED COST OF ALL EQUIPMENT FOR THE PROJECT OR 50 PERCENT OF THE REASONABLY ESTIMATED COST OF THAT EQUIPMENT ESPECIALLY DESIGNED FOR THE PROJECT."[6]

ENERGY CYCLE, INC. SUPPORTS THE CONCEPT ADVANCED IN THIS PROPOSED LEGISLATION. NEVERTHELESS, WE BELIEVE THAT S. 1396 IS MUCH TOO NARROW IN SCOPE. IN ITS PRESENT FORM, THE BILL DOES NOT GO AS FAR AS IT SHOULD TOWARD PROMOTING THE PUBLIC POLICY GOALS OF ENCOURAGING THE BROADEST POSSIBLE PROMOTION OF ALTERNATE ENERGY SOURCES. SPECIFICALLY, WE RECOMMEND THAT THE BILL INCLUDE ENERGY INVESTMENT TAX INCENTIVES FOR THE ANAEROBIC DIGESTION INDUSTRY.

C. ENERGY INVESTMENT TAX CREDITS ON BIOMASS PROPERTY

UNDER THE ENERGY TAX ACT OF 1978, PUB. L. NO. 95-618,[7] CONGRESS ESTABLISHED THROUGH DECEMBER 31, 1982 A 10 PERCENT ENERGY INVESTMENT TAX CREDIT FOR BOILERS, BURNERS, AND RELATED POLLUTION CONTROL AND FUEL HANDLING EQUIPMENT WHICH PRIMARILY UTILIZE FUELS OTHER THAN OIL OR NATURAL GAS (I.E., "ALTERNATE SUBSTANCE").[8] EQUIPMENT EMPLOYED TO CONVERT THESE ALTERNATE SUBSTANCES INTO A "SYNTHETIC LIQUID, GASEOUS, OR SOLID FUEL" ALSO WAS MADE ELIGIBLE FOR THE CREDIT.[9]

ALTHOUGH NOT EXPRESSLY MENTIONED, CONGRESS CLEARLY INTENDED PROPERTY USING BIOMASS FUELS TO QUALIFY FOR THE CREDIT AS "ENERGY PROPERTY" WITHIN THE DEFINITION OF "ALTERNATE ENERGY PROPERTY."[10]

UNDER THE WINDFALL PROFITS TAX ACT OF 1980, PUB. L. NO. 96-223,[11] CONGRESS CONTINUED THIS 10 PERCENT ENERGY INVESTMENT TAX CREDIT FOR THIS SPECIFIC PROPERTY AND EXTENDED THE CREDIT'S QUALIFICATION PERIOD THROUGH DECEMBER 31, 1985.[12] IT ALSO EXPRESSLY DESIGNATED A 10 PERCENT ENERGY CREDIT FOR BIOMASS ALTERNATE ENERGY PROPERTY.[13]

IN THE CONFERENCE REPORT TO THE WINDFALL PROFITS TAX ACT, CONGRESS EXPLICITLY OUTLINED THE SCOPE IT INTENDED FOR THE TERM "BIOMASS."[14] THERE, CONGRESS PROVIDED THAT

> BIOMASS IS GENERALLY ANY ORGANIC SUBSTANCE OTHER THAN OIL, NATURAL GAS OR COAL, OR PRODUCT OF OIL OR NATURAL GAS OR COAL. FOR THIS PURPOSE, BIOMASS INCLUDES WASTE, SEWAGE, SLUDGE, GRAIN, WOOD, OCEANIC AND TERRESTRIAL CROPS AND CROP RESIDUES AND INCLUDE WASTE PRODUCTS WHICH HAVE A MARKET VALUE. THE CONFEREES ALSO INTEND THAT THE DEFINITION OF BIOMASS DOES NOT EXCLUDE WASTE MATERIALS, SUCH AS MUNICIPAL AND INDUSTRIAL WASTE, WHICH

> INCLUDE SUCH PROCESSED PRODUCTS OF OIL, NATURAL GAS OR COAL SUCH AS USED PLASTIC CONTAINERS AND ASPHALT SHINGLES.[15]

CLEARLY, ANAEROBIC DIGESTION EQUIPMENT FALLS WITHIN THE CONGRESSIONALLY INTENDED SCOPE OF QUALIFIED BIOMASS PROPERTY.

DESPITE THE INTENT OF CONGRESS SO PLAINLY EXPRESSED IN THE CONFERENCE REPORT, THE STATUTORY LANGUAGE USES THE TERM "QUALIFIED FUEL" INSTEAD OF THE PHRASE "SYNTHETIC LIQUID, GASEOUS, OR SOLID FUEL" TO DEFINE ELIGIBLE BIOMASS ALTERNATE ENERGY CONVERSION EQUIPMENT[16] AND INADVERTENTLY DEFINES "QUALIFIED FUEL" IN A MANNER INCONSISTENT WITH ITS CLEARLY EXPRESSED CONGRESSIONAL INTENT. SPECIFICALLY, CONGRESS DEFINED "QUALIFIED FUEL" AT SECTION 48(1)(15)(C) OF THE CODE AS

> (I) ANY SYNTHETIC SOLID FUEL, AND
> (II) ALCOHOL FOR FUEL PURPOSES IF THE PRIMARY SOURCE OF ENERGY FOR THE FACILITY PRODUCING THE ALCOHOL IS NOT OIL OR NATURAL GAS OR A PRODUCT OF OIL OR NATURAL GAS.[17]

THIS RESTRICTIVE DEFINITION DOES NOT EXPRESSLY INCLUDE METHANE-CONTAINING GAS FOR FUEL OR ELECTRICITY, PRODUCED BY anaerobic digestion from nonfossil waste materials. For that reason, despite the Congress' ultimate aim as expressed so clearly in the conference report, anaerobic digestion equipment converting an alternate substance (*i.e.*, nonfossil organic wastes) into biomass-derived methane-containing gas has been interpreted as not qualifying for the energy investment tax credit. Unfortunately, S. 1396 does not remove the confusion that currently surrounds the eligibility of anaerobic digestion property for energy investment tax credit purposes.

In 1982, Congressman Bereuter and Senator Matsunaga -- with co-sponsors Senators Wallop and Grassley -- introduced H.R. 6131 (on April 21)[18] and S. 2766 (on July 21),[19] respectively, confirming what has been Congress' intention all along -- namely, that anaerobic digestion equipment be eligible for appropriate tax credits. Those identically-drafted bills would have included this methane-containing gas as a qualified fuel. Similarly, they would have permitted anaerobic digestion equipment, placed in service after December 31, 1982, to obtain the 10 percent energy investment credit. Regretably, because of the press of other events, Congress took no action on those proposed measures in 1982.

On March 3, 1983, Congressmen Bereuter and Heftel reintroduced Congressman Bereuter's 1982 measure as H.R. 1876.[20] On May 17 and 19, 1983, respectively, SENATOR PACKWOOD AND CONGRESSMAN HEFTEL INTRODUCED S. 1305[21] AND H.R. 3072,[22] BOTH ENTITLED THE "RENEWABLE ENERGY INCENTIVE ACT OF 1983." S. 1305 AND H.R. 3072 INCLUDED THE ANAEROBIC DIGESTER LANGUAGE OF H.R. 1876 IN SLIGHTLY DIFFERENT WAYS. UNLIKE S. 1396, THEREFORE, BOTH OF THE FOREGOING OMNIBUS ENERGY TAX INCENTIVE PACKAGES WOULD QUALIFY ANAEROBIC DIGESTER EQUIPMENT FOR THE 10 PERCENT ENERGY INVESTMENT TAX CREDIT THROUGH THEIR INCLUSION OF METHANE-CONTAINING GAS AS A QUALIFIED FUEL FOR PURPOSES OF DEFINING ELIGIBLE BIOMASS PROPERTY.[23]

BOTH S. 1305 AND H.R. 3072, UNLIKE S. 1396, WOULD EXTEND THE 10 PERCENT BIOMASS PROPERTY CREDIT THROUGH DECEMBER 31, 1990.[24] ALSO, EACH BILL WOULD EXTEND THE ENERGY CREDIT FOR BIOMASS PROPERTY BEYOND S. 1396'S 1992 TERMINATION DATE TO DECEMBER 31, 1995, UPON THE COMPLETION OF CERTAIN AFFIRMATIVE COMMITMENTS SUBSTANTIALLY SIMILAR TO THOSE PROVIDED FOR IN S. 1396.[25]

III. CONCLUSION

THIS SUBCOMMITTEE TODAY HAS THE SPECIAL OPPORTUNITY TO ENTHUSIASTICALLY CONFIRM THE CLEAR AND LONG-STANDING CONGRESSIONAL INTENT TO QUALIFY ANAEROBIC DIGESTION EQUIPMENT FOR THE 10 PERCENT ENERGY INVESTMENT TAX CREDIT AND, THUS, PROMOTE THE PRODUCTION AND DEVELOPMENT OF CRITICAL ALTERNATE ENERGY SOURCES. IT CAN INCLUDE QUALIFYING LANGUAGE IN

S. 1396 OR SUPPORT S. 1305 OR H.R. 3072 TO ACCOMPLISH THIS IMPORTANT RESULT.

A TAXPAYER ENGAGED IN AGRICULTURE USUALLY MUST SECURE THIRD-PARTY FINANCING IN ORDER TO INSTALL AN ANAEROBIC DIGESTER SYSTEM. THE APPLICATION OF THE ENERGY CREDIT TO THIS SYSTEM MAKES THIRD-PARTY FINANCING POSSIBLE. WITHOUT THE ENERGY CREDIT, THIS ALTERNATE ENERGY SOURCE WILL NOT BE UTILIZED TO ANY GREAT EXTENT.

THE SHORT TERM EFFECT ON GOVERNMENT REVENUES THROUGH THE USE OF THESE CREDITS BY THE ANAEROBIC DIGESTION INDUSTRY WILL BE MINIMAL. THE AVAILABILITY OF THESE ENERGY CREDITS FOR ANAEROBIC DIGESTER SYSTEMS WILL ENCOURAGE STRONG INVESTMENT INTO THE INDUSTRY. THUS, INVESTMENT-GENERATED INDUSTRY SALES WILL PROVIDE INCREASINGLY SIZABLE LONG-TERM TAXABLE INCOME FOR THE GOVERNMENT'S COFFERS.

THE ECONOMIC, ENVIRONMENTAL AND POLITICAL SIGNIFICANCE OF THE ANAEROBIC DIGESTION INDUSTRY TO THE CITIZENS OF THE UNITED STATES ARGUES IN FAVOR OF OUR RECOMMENDED CHANGES IN S.1396.

FOOTNOTES

[1] The co-sponsors include Senators Jackson, Wallop, McClure, Baker, Byrd, Garn and Hatch. H.R. 1396, 98th Cong., 1st Sess., 129 CONG. REC. S7666-S7669 (1983).

[2] 26 U.S.C. Section 46(a)(2).

[3] 129 CONG. REC., supra at S 7666.

[4] Id. at S7667.

[5] Id. at S7668.

[6] Id. at S7666.

[7] 26 U.S.C. Section 1 note et seq.

[8] Section 301 of Pub. L. No. 95-618 amending 26 U.S.C. Sections 46, 48; H.R. CONF. REP. No. 817, 96th Cong., 2d Sess. 131-132 (1980) (Crude Oil Windfall Profits Tax Act of 1980).

[9] Section 301 of Pub. L. No. 95-618 amending 26 U.S.C. Section 48; H.R. CONF. REP. No. 817, supra.

[10] Id.

[11] 26 U.S.C. Section 1 note et seq.

[12] Section 221 of Pub. L. No. 96-223 amending 26 U.S.C. Section 46(a)(2)(C)(i); H.R. CONF. REP. No. 817, supra at 132.

[13] Id.

[14] H.R. CONF. REP. No. 817, *supra* at 132.

[15] *Id.*

[16] 26 U.S.C. Section 48(l)(15)(B)(ii).

[17] *Id.* at Section 48(l)(15)(C).

[18] H.R. 6131, 97th Cong., 2d Sess. (1982).

[19] S. 2766, 97th Cong., 2d Sess. (1982).

[20] H.R. 1876, 98th Cong., 1st Sess. (1983).

[21] S. 1305, 98th Cong., 1st Sess. (1983). Co-sponsors include Senators Matsunaga, Durenberger, Moynihan, Baucus, Mitchell, and Pell.

[22] S. 3072, 98th Cong., 1st Sess. (1983). Co-sponsors include Congressmen Fowler, Matsui, Duncan, Flippo, Fuqua, Udall, Ottinger, Fish, Mineta, Corrada, Jeffords, Wyden, Williams, Wirth, Bedell, Wolpe, Harkin, Bereuter and Long; and Congresswomen Kennelly and Schneider.

[23] Section 7 of S. 1305 and Section 201 of H.R. 3072 amending 26 U.S.C. Section 48(l)(15)(C).

[24] Section 3 of S. 1305 and Section 101(a) of H.R. 3072 amending 26 U.S.C. Section 46(a)(2)(C)(i).

[25] Section 4 of S. 1305 and Section 101(b) of H.R. 3072 amending 26 U.S.C. Section 46(a)(2)(C) to add new subsection (iv).

Senator **Wallop**. Dr. Otte, I suspect that your assessment of the business expertise of the Environmental Policy Center is somewhat suspect when they say it's a rather excellent position for a company to find itself having invested $100 million of its own capital for a total return from all sources of $4 million, is a great benefit.

Dr. **Otte**. I am so puzzled at the gentleman's statement that some of these projects are paying out during the period of construction; I don't know what school of economics he attended.

Senator **Wallop**. That whole statement was not related to the real world of economics, but it is one of the problems that the country faces with people who are generally antiorderly economic-progress and growth.

I just would ask both you and Mr. Glover if there is any prospect that these projects to which you testified would progress without these credits.

I will ask you first, Dr. Otte, and then Mr. Glover.

Dr. **Otte**. So far, taking Imperial Valley of California as an example of one geothermal province—and there may be others in the United States yet to be explored and discovered—estimates have been made of the resource potential, and I express it in megawatts of generating capacity, of anywhere from 5,000 to 10,000 megawatts of generating capacity, an unusual geological province.

Now, it would take approximately 100 million barrels of oil per year of fossil fuel to generate a like amount of electrical energy. So you know now a little bit of the size. Or, at $30 a barrel, roughly speaking we are talking about $3 billion offset annually.

The resources have pretty well been identified, but not the technology—the fluids are very corrosive and very saline and with highly dissolved constituents, about 30 percent solids.

The industry, and there are others—not only Union Oil is working—has been engaged in coping with these problems.

As I said, there is daylight at the end of the tunnel. There are two 10-megawatt powerplants on the line actually generating power. The net economics of the projects are, it is operating at a loss for the Edison Co. and it is operating at a loss for the resource companies.

But we are doing this because basically, in California, it is unlikely that any more nuclear powerplants are going to approved, permitted, and constructed once the existing ones are completed. And likewise, it is unlikely that any coal plants will be built in the airshed of California.

Therefore, geothermal is really a viable alternative resource. But these technologies need to be perfected. With the current market expiration, we see that development on a large scale will happen in the late eighties and early nineties. We are currently in a development phase, where 10 megawatts is for 10,000 people; that's not for millions of people it's not a complete commercial reality. But it is online and producing and working.

We feel that in the next developmental phase, we need your support, and that is what the intent of the legislation is.

After that, when the energy tax credits expire, I think we should compete—meet the marketplace in competition with established technologies.

So this is what we are asking for, and I think it is a very vital incentive.

Senator **Wallop**. That is your ultimate risk, then.

Dr. **Otte**. That is my opinion. It has worked so far. Private enterprise has stepped forward, by itself with no Government subsidies or anything else, just the tax incentives. It has helped to make some of these projects, on paper more viable. And it is strictly paper, because right now they are operating at a loss.

Senator **Wallop**. Well, that is your ultimate risk, that you will be able to compete after doing all this.

Mr. Glover.

Mr. **Glover**. Mr. Chairman, I would say that the availability of the energy tax credit for this project is a specific provision of our offering to the Southern California Edison Co. to go forward with this plant. And considering that we are working here in an area that is a diversification for our company and not in our main line of business where our traditional investments are made, that the financial exposure that we face with this project without that assistance would not permit us to go forward.

Senator **Wallop**. Mr. Harris, with respect to the chloralkali electrolytic cells, it is my understanding that you asked the Treasury to qualify these cells under the existing laws at the time, and that they didn't act during the time those tax credits were in effect.

It's very hard to qualify for something that hasn't been defined; but is it your opinion or your company's opinion that, had they acted on the application, that the cells would have qualified for this energy tax credit?

Mr. **Harris**. Mr. Chairman, we would have, and the act of applying was not only ineffective for us but for everyone else who applied.

As I noted, not one application was acted upon by the IRS under the Secretarial authority. The letter we received from the IRS last March, where our application was returned without action, indicated that all applications were held in abeyance pending final regulations. Final regulations were never published. Since the credit generally expired on December 31, 1982, the inference is that they did not act on any applications.

Senator **Wallop**. It's great when your Government helps you.

I want to thank everyone for their testimony here this morning in support of this legislation and in opposition to it. The record, I think, has been made very well that this is probably highly in the national interest to proceed with this legislation, and that whatever static costs there may be to the Treasury, the dynamic costs of it will be minimal if at all, and the potential exists for a genuine return to the country for investing in this kind of tax policy.

So I appreciate your efforts and your travel and your eloquence on these topics.

The subcommittee stands adjourned.

[Whereupon, at 12:07 p.m., the hearing was concluded.]

[By direction of the chairman the following communications were made a part of the hearing record:]

STATEMENT OF THE
AMERICAN GAS ASSOCIATION
BEFORE THE
SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION
OF THE
COMMITTEE ON FINANCE
UNITED STATES SENATE
ON S. 1396, THE ENERGY SECURITY TAX INCENTIVES ACT OF 1983

July 1, 1983

Introduction

The American Gas Association (A.G.A.) is a national trade association comprised of nearly 300 natural gas distribution and transmission companies serving over 160 million consumers in all 50 states. A.G.A. member companies account for approximately 85% of the annual natural gas utility sales in our nation.

Natural gas serves over half of both residential and commercial establishments in the U.S. and more of American industry than any other single fuel. Further, gas provides a secure source of energy because foreign developments do not disrupt our supply. Greater recovery through varied non-traditional supply projects and improved technology will improve supply security for customers and permit further progress toward assuring gas-using companies of the supply stability on which long term business decisions often depend.

In order to promote both increased energy supplies for America and increased conservation of our traditional fossil fuels, the A.G.A. strongly supports the extension of the affirmative commitment rules for solar and biomass energy equipment, coal conversion equipment, and the expansion of eligibility to include tar sands and shale oil equipment as proposed in S. 1396, the Energy Security Tax Incentives Act of 1983 introduced by Sen. Pete Domenici (R-NM) and 7 others.

We recognize this is an emergency measure designed to give the "green light" to some project sponsors who were unable to qualify for the energy tax credits (ETC) under existing law. However, the extremely important area of cogeneration equipment was ignored in this legislation -- and the 10% ETC for this equipment expired at the end of 1982. For this reason, we urge the Subcommittee also to consider S. 1305, the Renewable Energy Tax Incentive Act of 1983, introduced by Sen. Bob Packwood (R-OR) and 6 others. This bill would accomplish many of the same purposes as S. 1396 but would also encourage increased production and utilization of natural gas in two ways: (1) by removing the current restriction on how natural gas must be used in order to be eligible for the cogeneration ETC; and (2) by expanding the definition of biomass property to include equipment producing methane-containing gas through anaerobic digestion. We would also urge the Subcommittee to consider expanding eligibility to include public utility property as eligible for these credits since regulated industries can make an important contribution to our nation's energy supply mix if provided with sufficient incentives.

The A.G.A. appreciates the opportunity to present our views on these important issues.

Cogeneration

A.G.A.'s members have a direct and vital interest in the efficient use of natural gas. Cogeneration equipment, through the sequential use of energy to create both electricity and useful thermal or mechanical energy, can quickly save 25-51% of the energy used by conventional boilers or by electric heating or air conditioning.[1] A.G.A. thus strongly supports cogeneration as a means of reducing total U.S. energy consumption through the productive use of what would otherwise be wasted energy. (Two-thirds of the energy used to generate electricity conventionally is lost as waste heat.) We urge the Subcommittee to include gas-fired cogeneration equipment as eligible for energy tax credits along with the other technologies contained in S. 1396.

As mentioned previously, A.G.A. particularly supports the provision in S. 1305 which would not only extend the availability of the credits until December 31, 1990, but would also lift the restrictions on use of natural gas.

When Congress passed the Crude Oil Windfall Profit Tax Act of 1980, which created the cogeneration tax credit, there was a great deal of concern about supply of natural gas. Natural gas-fired cogeneration equipment was therefore excluded from qualifying for the credit. The natural gas supply outlook, however, has brightened considerably. Given the improving gas supply outlook, there is no justification for continuing a tax bias against natural gas-fired cogeneration equipment.

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[1] "An Energy Conservation and Economic Analysis of Gas-Fired Cogeneration in Commercial and Industrial Applications", Energy Analysis 1981-9 (August 28, 1981; American Gas Association, Arlington, Virginia).

Natural gas is the fuel of choice for most cogeneration applications. It is clean, easy to use, and the gas-fired cogeneration equipment is currently available. In contrast, equipment which does not use natural gas (or an oil-derived product) is not generally available. In addition, cogeneration using alternative fuels has associated environmental and fuel handling costs well beyond those of gas. The previous cogeneration tax credit did not provide an effective incentive for cogeneration. In this regard, Sen. Bob Packwood (R-OR) and his cosponsors should be congratulated for their introduction and support of S. 1305, the Renewable Energy Tax Incentive Act of 1983. The provisions of this bill permitting gas- and oil-fired cogeneration equipment to qualify for tax credits on an equal basis with alternatively fueled cogeneration equipment are commendable.

Solar

Natural gas can be used as a complement to solar energy in many uses. The near-term applications of solar/gas systems are: space conditioning, water heating, and industrial uses where temperatures less than 500°F are acceptable.

The availability of federal energy tax credits significantly improves the economics of active solar heating and hot water systems since such systems generally have high capital costs and long-term paybacks. Thus, in the short-term they are frequently not as attractive as conventional heating systems. Tax credits can help to overcome this major deterrent to greater use of solar energy.

The A.G.A. strongly supports the development of solar energy where it is economically justifiable as a supplement to normal utility service. Solar energy serves the gas industry's interests by: (1) "stretching out" the nation's remaining natural gas supplies; and (2) partly offsetting the cost impact of rising unit prices for natural gas by reducing the total number of energy units required (with the result that the competitiveness of natural gas is improved).

Biomass

Refined techniques for the conversion to methane of marine, terrestrial and waste biomass may yield enormous supply payoffs, since biomass represents an inexhaustible, renewable energy source. Our supply estimates for the year 2000 are:

- Onshore and marine -- 35-135 billion cubic feet (Bcf).
- Urban waste and animal residue -- 200-800 Bcf.

The extreme variation in low and high estimates is due, in large part, to differing assumptions with regard to the legislative and regulatory framework within which these technologies are developed. Thus, legislative policies, including tax credit availability, will promote technology development and enhance industry's ability to produce near the higher end of the estimate range.

The natural gas industry is playing a lead role in the development of these supplemental supplies, including sponsorship of several major methane recovery projects from landfills and intensified research and development of gas from marine and terrestrial biomass sources.

At the end of 1982, the United States had sixteen functioning landfill biogas projects, producing at least 2,848.6 million cubic feet per year. A recent A.G.A. study lists the actual landfill projects as well as potential landfill biogas sites, many of which are undergoing testing and feasibility studies.[2] (Attachment 1) Potential projects are located in thirteen states and the District of Columbia. Continued availability of the ETC for biomass will help ensure that these and other similar projects can become operational.

In addition, the A.G.A. recommends that the Subcommittee adopt a provision similar to that found in S. 1305 which would expand the definition of eligible biomass property to include equipment producing methane through anaerobic digestion (i.e., decomposition occurring in the absence of oxygen) of all nonfossil waste materials, not just those resulting from agricultural operations. Such a limitation could deter companies from entering into new and different types of gas recovery operations -- such as the potential landfill projects listed in the attachment.

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[2] "Status of Landfill Biogas Projects", Gas Energy Review, Vol. II, No. 6 (March 1983, American Gas Association, Arlington, Virginia.)

Synthetic Fuels/Coal Gasification

The production of synthetic fuels will be a major contribution to the long term energy supply. Coal gasification, creating environmentally benign methane, can account for a major portion of this contribution. Although the U.S. is estimated to have vast coal reserves -- over 430 billion tons -- only about half of these reserves can be recovered with current levels of technology.

Encouragement of technologically improved projects through the existence of these credits and the expansion of eligibility to necessarily associated property (such as oxygen plants) will permit recovery of even more of our coal resources by expanding the breadth of coal feedstock that specific conversion methods can accept.

Attached is a table outlining the status of high-Btu coal gasification plants either proposed or underway.[3] (Attachment 2) Because of the large capital costs of facility construction and the long lead time required for planning and construction, the affirmative commitment changes made in this legislation and the extension of the credit's availability are critical to the companies which are involved in the decision-making process.

Based on coal's current and expected cost and national security advantages over imported oil, development of the nation's coal resource is particularly desirable. However, conversion to a more usable and broadly acceptable form is necessary before coal can be widely used. Although there are three main forms [electricity, methane and liquids (petroleum substitutes)], coal gasification is particularly advantageous.

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[3] "Status of High-Btu Coal Gasification", Gas Energy Review, Vol. II, No. 6 (June 1983, American Gas Association, Arlington, Virginia.)

- Its production will use an in-place, million-mile gas transmission and distribution network.
- From a consumer's perspective, provision of major residential and commercial energy needs through coal gasification is less expensive than meeting these needs through coal generated electricity.
- From a national perspective, equivalent amounts of end-use energy would entail significantly lower investment costs and environmental residuals than either a coal electric or coal-to-liquids facility.

For these reasons, A.G.A. wholeheartedly supports the provisions of S. 1305 and S. 1396 dealing with synthetic fuels and coal gasification.

Tax Credits for Public Utility Property

A.G.A. believes that, if national policy is to encourage investment in equipment and processes that save energy, it makes no sense to exclude public utilities from the available incentives. This is especially true for equipment and processes that are complex and which require utility expertise to prove economic viability prior to general industry acceptance. We thus recommend that public utility property be eligible, on the same basis as other property, for the ETC.

Conclusion

A.G.A. believes that the extension of energy tax credits for renewable and unconventional forms of energy production -- as well as the renewal and broadening of the credits for cogeneration equipment -- are essential to ensure that our nation is able to meet its future energy needs. Consequently, we urge the adoption of S. 1396 with the changes noted above taken from S. 1305. In addition, we ask the Subcommittee to consider removing the restriction on energy tax credit eligibility for public utility property.

Attachment 1

Status of Landfill Biogas Projects

by Jeffrey L. Wingenroth
Manager, Gas Supply Programs
American Gas Association
and
[illegible] A. B[illegible]
Gas Supply Analyst
American Gas Association

Introduction

The table that follows is an update of the July 1982 "Status of Landfill Biogas Projects." During 1982, three projects have become operational resulting in a total of 16 functioning landfill biogas projects as of year-end 1982.

Five of the 16 projects produce high-Btu pipeline quality gas. Local gas companies inject the high-Btu gas into the pipeline system for distribution throughout their service area. Eleven biogas projects produce medium-Btu gas for nearby electric generation facilities or industrial customers.

In June of 1982, subsidiaries of The Brooklyn Union Gas Co., and Getty Synthetic Fuels, Inc. commenced production from the largest capacity landfill biogas project. The project will have the ability to produce up to 5.0 MMcf per day of high-Btu gas from the Fresh Kills Landfill on Staten Island, N.Y. This will be enough high-Btu gas to heat 10,000 homes in Brooklyn Union's service area.

During 1983 several medium-Btu projects are expected to commence operations.

Background

The natural process of anaerobic digestion of municipal waste in landfills produces biogas—a mixture of methane, carbon dioxide, nitrogen and trace amounts of other gases. Once the landfill is covered with an impermeable surface, the biogas is recovered by drilling shallow wells (between 30 feet and 100 feet deep) into the landfill and using standard industrial compressors to create pressure differentials between the landfill and the collecting wells. After processing, the biogas can be used on site or transported to nearby industrial facilities. The heating value of the biogas at the wellhead is between 450 and 550 Btu per cubic foot. Some projects find it more economical to use carbon dioxide removal techniques to produce a high-Btu product which gas companies use to augment their supplies.

Recovering the gas from landfills can reduce some of the environmental hazards associated with landfills such as gas accumulation and explosion. Research directed towards improving the efficiency and environmental safety of the recovery technology is continuing in response to the positive results of the early operational sites.

Current Statistics

At least 2,848.6 MMcf of landfill gas was commercially produced during 1982; of this amount 1,287.6 MMcf was high-Btu gas and 1,561.0 MMcf was medium-Btu gas. During 1982, a production capability was achieved to produce approximately 12.85 MMcf per day of high-Btu gas and 16.62 MMcf per day of medium-Btu gas. In addition to these volumes there are amounts being collected by other projects, some of which utilize the gas recovered in on-site facilities. The projects listed in the following table demonstrate the importance of landfill gas to the natural gas industry.

Also included in the following table are potential landfill biogas sites, many of which are undergoing testing and feasibility studies. The listing of these sites was compiled from information provided by the Government Refuse Collection and Disposal Association; the U.S. Conference of Mayors; Johns Hopkins University; Getty Synthetic Fuels, Inc.; and Genstar Gas Recovery Systems, Inc. ☐

American Gas Association, Gas Energy Review Vol. 11 No. 3 (March 1983)

Status of Landfill Biogas Projects (As of December 1982)

Project/ Project Manager	*Commercial Use*	*Date of First Operations*	*Production*			**Remarks**
			Type	*MMcf/d*[a]	*1982 Estimated*[a] *(MMcf)*	
OPERATIONAL						
C.I.D., Chicago IL/Getty Synthetic Fuels, Inc.	The Natural Gas Pipeline Co. of America purchases the gas for blending with pipeline gas supplies.	December, 1980	High	2.50	488.0	Landfill has 8 million tons of refuse in place and is receiving 7,000 tons per day. Commercial production came on line in Dec. 1980.
Fresh Kills, Staten Island NY/Getty Synthetic Fuels, Inc.; Methane Development Corp.	Brooklyn Union Gas Co. uses the gas to blend with pipeline gas supplies.	June, 1982	High	5.00	270.9	Landfill has 75 million tons in place and is receiving 10,000 tons per day. Project area is 400 acres, 50 feet deep.
Palos Verdes CA/Getty Synthetic Fuels, Inc.	Southern California Gas Co. purchases the gas to blend with pipeline gas supplies.	June, 1975	High	1.00	149.6	Operations on ¼ of 176-acre landfill averaging 150 feet to 200 feet deep. Total refuse in place is 20 million tons. Raw gas is 550 Btu per scf, then upgraded through removal of CO_2 and other components by molecular sieve.
Monterey Park CA/Getty Synthetic Fuels, Inc.	Southern California Gas Co. purchases the gas to blend with pipeline gas supplies.	August, 1979	High	4.00	353.1	150 acres with 23 million to 25 million tons of refuse in place. Average depth of landfill is 300 feet. Raw gas is 550 Btu per scf, then up-graded through removal of CO_2 and other components by Selexol and a proprietary process.
Mountain View CA/Pacific Gas & Electric Co.	Pacific Gas & Electric Co. uses the gas to blend with pipeline gas supplies.	August, 1978	High	.35	26.0	25 acres of 500 acres developed using 33 wells averaging 35 feet deep. Expansion is underway which will increase daily production to about 1.0-1.2 MMcf of 750 to 800 Btu/cf gas.

Project/ Project Manager	*Commercial Use*	*Date of First Operations*	*Production*			Remarks
			Type	*MMcf/d*	*1982 Estimated*[b] *(MMcf)*	
OPERATIONAL						
Cinnaminson NJ/Public Service Electric and Gas Co.	The Public Service Electric and Gas Co. sells the gas to the Hoeganaes Co. for heating ladles in which steel is melted.	August, 1979	Medium	.70	110.0	Using 30 acres of a 64-acre landfill averaging 50 feet deep. 2½ million tons of refuse in place. Future plans are to increase production to 1.2 MMcf per day.
Bradley West, Los Angeles CA/Genstar Gas Recovery Systems, Inc.	Gas will be used by the L.A. Department of Water and Power Valley Generation Station as boiler fuel for electric generation.	Summer, 1982	Medium	3.50	Negligible	9 million tons of refuse in place at landfill.
Davis Street, San Leandro CA/Getty Synthetic Fuels, Inc.	Domtar Gypsum of America purchases the gas for use as an industrial fuel.	July, 1981	Medium	3.00[b,c]	Not Available	194-acre landfill, approximately 80 feet deep. The recovered gas is processed by a proprietary technology to remove impurities and moisture.
Acme, Martinez CA/Getty Synthetic Fuels, Inc.	Contra Costa Sanitation District purchases the gas for use as an industrial fuel.	April, 1982	Medium	2.50[b,c]	—	125-acre landfill, approximately [illegible] feet deep. The recovered gas is processed by a proprietary technology to remove impurities and moisture.
Sheldon-Arleta, Los Angeles CA/City of Los Angeles	Gas is used by the L.A. Department of Water and Power Valley Generation Station as boiler fuel for steam generation of electricity.	November, 1979	Medium	2.20	Negligible	3-million [illegible] landfill with an average depth of 125 feet. Facility is currently being modified.
Bradley East, Los Angeles CA/Genstar Gas Recovery Systems, Inc.	Gas is used by the L.A. Department of Water and Power Valley Generation Station as boiler fuel for electric generation.	January, 1981	Medium	2.20	803.0	8 million tons of refuse in place at landfill with depth of between 90 feet and 125 feet.

			Production			
Project/ Project Manager	*Commercial Use*	*Date of First Operations*	*Type*	*MMcfd*[a]	*1982 Estimated*[b] *(MMcf)*	Remarks
OPERATIONAL						
Arcon, Wilmington CA/Watson Biogas Systems	A Shell Oil refinery purchases the gas to use as boiler fuel for process steam generation.	August, 1978	Medium	1.50	400.0	2 to 3 million-ton landfill with an average depth of 60 feet.
North Valley, San Fernando CA/Getty Synthetic Fuels, Inc.	Newhall Refinery purchases the gas for use as an industrial fuel.	November, 1981	Medium	1.10[3,4]	Not Available	42-acre landfill over 250 feet deep. The recovered gas is processed by a proprietary technology to remove impurities and moisture.
Los Lomas, Duarte CA/Watson Biogas Systems	Southern California Edison Co. purchases electricity generated from the gas.	September, 1982	Medium	1.00	Negligible	40-acre landfill is 4 years old and 60 feet deep.
Industry CA/City of Industry	The City of Industry intends to use the gas as boiler fuel for heating and hot water for a convention center and recreational facilities.	March, 1980	Medium	.60	Negligible	160-acre landfill with an average depth of 50 feet. Approximately 3½ million tons of refuse in place. Use of the gas is being tested.
Azusa CA/Azusa Land Reclamation (Subsidiary of Southwestern Portland Cement Co.)	Reichhold Chemical Co. purchases the gas to use as boiler fuel for process steam generation.	April, 1978	Medium	.68	247.2	320-acre landfill with an average depth of 170 feet.
Winston-Salem NC/City of Winston-Salem	The City of Winston-Salem uses the gas to generate power for a sewage treatment plant.	August, 1981	Medium	.14	0.8	25-acre landfill, 40 feet deep. Capital cost of the wells and pipeline was less than $25,000. Gas from landfill supplements medium-Btu gas from anaerobic digestion of raw sewage.
	ESTIMATED 1982 PRODUCTION		High-Btu Medium-Btu		1,287.6 1,561.0[c]	
					2,848.6	

Project/ Project Manager	Commercial Use	Date of First Operations	Production			Remarks
			Type	MMcfd[a]	1982 Estimated[b] (MMcf)	
TO BE OPERATIONAL BY DECEMBER 31, 1983						
Menlo Park, CA/Genstar Gas Recovery Systems, Inc.	Local electric utility will purchase electricity generated from the gas.	Early 1983	Medium	—	—	
Rossman's Landfill Oregon City OR/Rossman's Landfill, Inc.	To be determined	July, 1983	Medium	2.6	—	Collection system is 70% complete.
Carson CA/Watson Biogas Systems	Southern California Edison Co. will purchase 1.7 Mw generated from the gas.	October, 1983	Medium	—	—	Collection system is complete.
Olinda Landfill, Orange County CA/Getty Synthetic Fuels, Inc.	Southern California Edison Co. will purchase electricity generated on-site from landfill gas.	October, 1983	Medium	—	—	

OTHER POTENTIAL LANDFILL BIOGAS SITES

California:	Burbank, City of Burbank #3; Corona, Corona Landfill; Glendale, Scholl Canyon; Irving, Coyote Canyon Landfill; Los Angeles, Hewitt Landfill; Lopez Canyon; Mountaingate; Penrose Landfill; Newby Island Sanitary Landfill; Palo Alto, Palo Alto Landfill; Santa Clara, Santa Clara Sanitary Landfill; West Covina, BKK Landfill; Whittier, Puente Hills Landfill
Colorado:	Adams County, Commerce City Landfill; Denver, 62nd Street Landfill

District of Columbia:	Washington, Kenilworth Landfill
Illinois:	Chicago, 31st Street Landfill; Blue Island Landfill
Kentucky:	Louisville Campground Landfill
Maryland:	Ellicott City, New Cut Road Landfill; Prince George's County, Oxon Cove Landfill; Rockville, Gude/Southlawn Sanitary Landfill
Michigan:	Detroit, Holloway Landfill; Sanicem; Joslyn Road; Riverview, Riverview Land Preserve
New Jersey:	Lyndhurst, Kingsland Sanitary Landfill
New York:	Patchogue, Holtsville and Brookhaven Landfills; Long Island, North Hempstead Landfill; Islip; Babylon
Ohio:	Cleveland, Royalton Road Landfill
Oregon:	Portland, St. John's Landfill
Pennsylvania:	Morristown, GROWS Landfill; Pittsburgh, Parkway Center Landfill; South Hills Landfill; Valley Forge, Knickerbocker Landfill
Rhode Island:	Johnston, Central Landfill
Virginia:	Fairfax County, Lorton Landfill; Richmond, Fells Street Landfill

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[1] Production volumes of the type of gas indicated. For operational projects, actual volumes are used; otherwise, design volumes are used.
[2] Estimated using available year-to-date information and average daily production data through remainder of year.
[3] Approximate.
[4] Raw gas.
[5] Does not include production from sites where data were unavailable.

Attachment 2

Status of High-Btu Coal Gasification

by Jeffrey L. Wingenroth
Manager, Gas Supply Programs
American Gas Association
and
Aileen A. Bohn
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American Gas Association

In Brief

The following table updates the status of high-Btu coal gasification plants last presented in the November 1982 issue of the Gas Energy Review. *Since the last update, several projects have moved to an inactive stage including the Utah Resources International Inc.'s project planned for Garfield County, Utah; the Northwest Corp.'s project planned for Oregon; and the Crow Tribe Pacific Coal Gas Co.'s project planned for Montana.*

SFC Activity

As of January 10, 1983, the closing date of the third solicitation, the U.S. Synthetic Fuels Corp. (SFC) received 46 proposals requesting financial aid. Twenty-nine of the proposed projects had been reviewed under previous SFC solicitations and the remainder were new submittals. Included in the 46 projects initially reviewed in the third solicitation were nine coal gasification projects, 20 coal liquefaction projects, 11 tar sands projects and 13 oil shale projects.

Two high-Btu coal gasification projects are among 24 of the original 46 projects still being reviewed by the SFC in the third soliciation. These two projects—the Memphis Light, Gas and Water project planned for Memphis, Tenn. and the New England Energy Park Project planned for Fall River, Mass.—were both removed from the second solicitation for review during the third solicitation. To date, the Memphis Light Gas and Water project has successfully completed the SFC's maturity and strength tests and has moved to Phase II consideration. The New England Energy Park Project has successfully completed the initial maturity test of the third solicitation. The Memphis Light, Gas and Water project will produce 4.3 MMcf per day of high-Btu gas along with approximately 150 MMcf per day of medium-Btu gas. The New England Energy Park project will produce 50.0 MMcf per day of high-Btu gas in the winter, 1,000 tons per day of methanol in the summer and electricity year-round.

The third solicitation is intended to be the SFC's last general solicitation for financing synthetic fuels projects. Competitive solicitations targeted for specific resources will comprise the next round of SFC solicitations. The first such solicitation, targeted for oil shale projects, was issued in January of this year. The SFC issued a draft solicitation for coal gasification projects from Gulf Coast Lignite late in March 1983 to be finalized in April.

High-Btu Coal Gasification Supply Potential

The A.G.A. Gas Supply Committee, in a revision of *The Gas Energy Supply Outlook: 1980-2000*, estimates that under a favorable political and economic climate, coal gasification could be an important source of supplemental gas by the year 2000. The progress being made by Great Plains and the other pioneer projects listed in Table 1 should prove vital toward the gas industry's achievement of long-term supply goals. ☐

American Gas Association, Gas Energy Review Vol. 11 No. 6 (June 1983)

TABLE 1

Status of Active High-Btu Coal Gasification Projects

(As of April 1983)

Controlling Company	*Site*	*Process*	*Coal Feed Tons/day*	*Peak Output MMcf/day*	*Status*
American Natural Resources Co.; MidCon Corp.; Tenneco, Inc., Transcontinental Gas Pipe Line Corp.; Pacific Lighting Corp.	Beulah-Hazen Area, Mercer County, N.D.	Lurgi gasification with methanation	14,200	137.5	Project is on schedule for completion by late 1984. All of the gasifiers are in place and construction is over 50% complete.
Memphis Light, Gas and Water Division	Memphis, Tenn.	U-Gas with methanation	3,158	4.3	Memphis Light, Gas and Water plans to convert high-sulfur bituminous coal to 300 Btu/cf industrial gas at a rate of 167 MMcf/d. Approximately 17.5 MMcf/d will be methanated to yield 4.3 MMcf/d of pipeline quality gas. Project has passed the maturity and strength tests and is being reviewed under Phase II of the SFC's third solicitation. Project is in the final design stage.
Tenneco Coal Gasification Co.	Wibaux, Mont.	Lurgi gasification with methanation and Texaco partial oxidation unit for by-product liquids	37,000	280	Estimated total capital costs of the plant are $2.3 billion (1980 $). First gas production could occur in 1990.
Texas Eastern Corp.	Northwest New Mexico	Lurgi gasification with methanation	29,000	142	Feasibility study stage was completed last fall. Project is in a maintenance status.
Mountain Fuel Resources Co.; Mono Power Co.	Emery County, Utah	Lurgi gasification with methanol & methanation	4,000	20 (and 2,400 tons/day methanol)	Economic and environmental feasibility studies are underway. State pre-qualification approval of the site has been received. An option for water rights has been signed.

Controlling Company	*Site*	*Process*	*Coal Feed Tons/day*	*Peak Output MMcf/day*	*Status*
Northwest Corp.	Oregon	Texaco gasification	27,400	125 (plus methanol and/or Med.-Btu gas)	Project is currently in an inactive stage. Forty percent of the coal would be converted to medium and high-Btu gas plus methanol, 20% would be burned for electricity, and 40% would be exported to Japan. Corporation is evaluating other potential high-Btu coal gasification projects.
Utah Resources International Inc.	Garfield County, Utah	Lurgi gasification with methanation	17,000	250	Project is currently in an inactive stage.
Washington Natural Gas Co.	McCone County, Mont,	Lurgi gasification with methanation	30,000	250	Private funding of the feasibility study is being sought. Project is currently in an inactive stage.
Crow Tribe of Montana and Pacific Coal Gas Co.	Crow Reservation, Mont.	Lurgi gasification with methanation	12,500 25,000	137.5 (Stage I) 275 (Stage II)	Plans are to build the project in two stages. Project is currently in an inactive stage.
Northern Natural Resources Co. (9 member consortium)	Oliver County, N.D.	Lurgi gasification with methanation	12,000	75 (and 18,000 Bbl/d methanol)	Preliminary feasibility study underway. Project will produce both high-Btu gas and methanol and possibly electricity.
The Brooklyn Union Gas Co; EG&G, Inc.; Eastern Gas and Fuel Associates; Bechtel Power Corp.; Westinghouse Electrical Corp.	Fall River, Mass.	Westinghouse with Conoco Methanation	3,000	50.0 in winter (1,000 tons/day methanol in summer and electricity year-round)	Project has passed the maturity test and is being reviewed under the strength test of the SFC's third solicitation.

The American Wind Energy Association

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Statement of Thomas O. Gray
Executive Director, American Wind Energy Association
for submission to the
United States Senate
Committee on Finance
Subcommittee on Energy and Agricultural Taxation

The American Wind Energy Association, which represents manufacturers, component suppliers, and developers in the wind energy industry, appreciates the opportunity to provide its views on S. 1396, the "Energy Security Tax Incentives Act of 1983."

In concert with other organizations from the renewable energy and cogeneration industries which have testified on S. 1396, we share the view of S. 1396's supporters that the present energy tax credits, which expire in 1985, will not provide the degree or duration of incentive needed for these emerging industries to realize their full potential.

However, we hope the subcommittee, while considering the energy credits, will also give its attention to the more comprehensive approach of extending and increasing them, as proposed in S. 1305, the "Renewable Energy Tax Incentives Act of 1983", sponsored by Senators Bob Packwood (R-OR) and Spark Matsunaga (D-HI).

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Although the affirmative commitment language contained in S. 1396 might be very helpful to a few major wind projects, the wind industry as a whole needs the broader tax incentive support which only S. 1305 can provide.

Businessmen, entrepreneurs and investors in the renewable energy technologies have labored under extremely difficult circumstances during the few years since the energy tax credits were enacted.

The economic recession from which our country is only now recovering has created problems for many industries. But the renewable energy industries have suffered more than most for a number of reasons:

First, because they are new, they are composed of a disproportionate number of small businesses compared to more traditional industries. Small businesses, of course, have been devastated by the high interest rates we have recently experienced. Most of them have difficulty obtaining financing under any circumstances, and unusually high rates simply compounded the problem.

Second, owing to an unforeseen slackening of demand across the economy, oil prices have weakened dramatically, causing the cancellation of a number of major renewable energy projects for which financial planning was based on steadily rising costs for conventional fuels.

Third, the favorable investment climate which was supposed to have been created by the energy tax credits for these technologies has been drastically altered by a number of events: inexcusably long delays by the Internal Revenue Service in issuing rules to implement the energy tax credits; attacks by the Department of the Treasury on the business energy credit on two occasions in the last two years; depreciation changes in the Tax Equity and Fiscal Responsibility Act of 1982 which reduced the value of the credits; a threat early this year to lengthen the depreciation period for property used for small power production; and changes in the tax treatment of that property which are now being discussed as part of the Governmental Leasing Tax Act of 1983.

In short, almost since these incentives were initially provided, their impact has been weakened by a number of factors, none of which has any relation to the inherent value of these technologies.

We continue today to have the same national interest in achieving energy independence and in the development of renewable energy technologies as we did four years ago when these incentives were first provided.

I see nothing to suggest that this situation will change in the foreseeable future. Imports still account for a substantial portion of our energy consumption, and will likely continue to do so for many years to come. With continuous unrest in the Middle East, the national security implications of this unhealthy dependence remain a serious concern. We must begin now to build for the future.

One measure of the potential impact which renewable energy technologies can have on that future is provided by a 1982 report from Resource and Technology Management Corporation, which develops comprehensive data on new energy sources and their market growth.

According to the report, renewable energy will contribute about 8.25 percent of this nation's energy supply by 1985 compared with 7.1 percent in 1980. This 1.15 percent increase amounts to about 125 million barrels of oil saved per year, and will bring the total energy savings from renewable sources by 1985 up to 1.16 billion barrels per year.

Given the proper environment of incentives, I believe considerably greater growth can be achieved by these technologies -- growth which will more than repay to the Treasury and to our nation any revenue loss which results in the short term. Renewable energy businesses will pay taxes in future years, both on sales of equipment and on sales of electricity to the utility grid. In addition, business fuel write-offs for conventional fuels will be reduced, thereby supplying the Treasury with an offsetting source of revenue.

We therefore strongly urge the subcommittee to go beyond the limited objectives of S. 1396 and to extend and enhance the tax credits for renewable energy in the manner proposed in S. 1305.

STATEMENT OF
ARCO SOLAR INDUSTRIES

SUBMITTED IN CONNECTION WITH A HEARING
HELD ON FRIDAY, JUNE 17, 1983
BY THE SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION
OF THE SENATE COMMITTEE ON FINANCE

ON

S. 1396, SENATOR DOMENICI'S BILL TO EXTEND THE
AFFIRMATIVE COMMITMENT PERIOD FOR CERTAIN
ENERGY TAX CREDITS

ARCO Solar would like to state its views regarding S.1396. We applaud those Senators who support focused extension of renewable energy tax credits. The success of federal efforts with the private sector in photovoltaic research and development has resulted in the world leadership of U.S. companies in the renewable energy industry. Enactment and enhancement of the tax credits for the photovoltaic industry, today, would facilitate development of its market worldwide and help assure U.S. commercial leadership in this critical technology.

Photovoltaics are increasingly recognized as one of the most promising renewable energy technology. Substantial price reduction and market growth have characterized the technology over the past few years. We expect equally dramatic progress before 1990. Foreign competition, however, has begun to challenge U.S. producers; today, foreign producers, inevitably government-supported, account for 40 percent of world market sales.

Net cost reduction is the key to further commercialization of photovoltaic technology in the U.S. and in turn to U.S. success in the world market. Successful exports have almost always been preceded by domestic market success. In our view, enhancement of tax credits for photovoltaic installations in the U.S., with additional incentives for domestic producers only, would constitute an effective competitive policy for the domestic industry in the world market.

Price effective competition at home, driven at first by focused tax incentives, would lead to market growth, on-line operational experience, customer acceptance and technological development, and in turn result in a competitive product worldwide as foreign customers recognize and then repeat U.S. market acceptance of the technology produced in the U.S.

To put this international competitive strategy in place, we recommend the following:

- o increase the federal tax credit from 15 to 30 percent for renewable energy systems and extend the credit for five years;
- o limit the additional 15 percent credit to photovoltaic products manufactured in the U.S.;
- o extend the availability of the credit to public utilities, who after all will be one of the critical entities directly involved in bringing the benefits of this new technology to the consumer.

We believe the benefits of such a coherent approach to the market development of photovoltaic technology at home and abroad will far outweigh the costs to the U.S. Treasury (demonstrably small given the fledgling size of the industry). Conversely, the costs of a domestic photovoltaic industry falling stillborn to foreign competitive strategies are obvious in terms of future employment opportunities lost and another U.S. failure in the realm of international technological competition for the products and markets of the future.

Implementation of farsighted and focused policy now will promote economic activity in a new, job creating commerical technology, as well as provide for an indigeneous, environmentally benign source of additional electrical generation for the country, which can be added to the existing power grid on an incremental, appropriate-scale basis. Such a policy also offers the best prospect of maintaining a positive balance of trade in viable renewable energy technology and products. Rapid industry growth at home is a necessity now, if significant benefits are to materialize for the U.S. in the world market by the late 1980s and early 1990s.

We appreciate this opportunity to present our views.

July 1, 1983

Statement of Domenic J. Falcone
Executive Vice President
Geothermal Resources International, Inc.
Before the Subcommittee of Energy and Agriculture Taxation
of the Senate Finance Committee
United States Senate

I wish to thank the Subcommittee for allowing our Company to testify on proposed legislation, Senate Bill S1396.

Geothermal Resources International, Inc. is a medium size company whose primary business activity is exploration and development of geothermal resources in the United States, with emphasis on activity in The Geysers, California. GRI is one of the oldest companies in the geothermal business. It drilled its first successful geothermal wells in 1967.

In the interim years, GRI's activity became quite passive due to an inability to raise funds in the capital markets. Part of this inability was caused by a tax code which did not give proper recognitiion to geothermal resource activity both on the exploration and development side as well as on the user side. Fortunately, the 1978 Tax Reform Act was passed and appropriate legislation was made for the geothermal industry. At the time, we argued for a longer period for application of the energy tax credit than was eventually approved. However, we did not prevail even though it was acknowledged that in order to go from exploration to production at least seven years was required. This being the case the energy tax credit really would be of benefit for only one year since the project had to be in service by 1985.

In spite of that time constraint, our company, primarily because of the favorable tax provisions available in 1979, began to negotiate a joint venture for exploration and development in The Geysers. The hope was that we could shorten the in service time. Since 1980, we have spent in excess of $50 million dollars on geothermal related activity and as predicted we will not be able to take advantage of the energy tax credits if they are terminated in 1985, and neither will the utilities or investors who would have financed the power plants which utilize the resource. In fact, we have recently tried to raise financing but it has not been successful in part because the energy tax credits will not be available to the investor because the power plant will not go into operation until 1988. This situation is not limited to GRI. There are numerous power plant projects whose geothermal operators such as ourselves started in the hope of being completed prior to 1985 but due to governmental or other delays will not be completed by then. The after tax economics are materially adversely impacted.

In geothermal, the developer is not the master of his fate. We are dependent on third party users over whom we have no control, therefore, our ability to predict in service time is impaired. This is quite a different situation than other alternative energy sources where the entire project is generally under the control of one entity.

The geothermal industry represents a domestic energy source which should be fostered. The dependence on foreign sources for the energy needs of the United States can be mitigated. However, this industry can not thrive and prove this point if a major incentive is taken away from it.

We believe that extension of the energy tax credits to the end of 1992 is very important and support the enactment of S1396 with one exception. We believe that as long as the development of geothermal resources has begun and a contract exists under which that resource will be sold that the energy tax credit should be available as is currently the case even if the plant begins to operate after 1992.

I would be pleased to testify personally in the future if the Subcommittee determines it necessary to have additional hearings on S1396, a potentially energy security act.

Great Plains Gasification Associates
600 Renaissance Center, Suite 1100
Detroit, Michigan 48243 · (313) 259-4555

June 28, 1983

Mr. Roderick A. DeArment
Chief Counsel
Committee on Finance
Room SD-221
Dirksen Senate Office Building
Washington, D. C. 20510

Dear Mr. DeArment:

ANG Coal Gasification Company (ANG) on behalf of Great Plains Gasification Associates (Great Plains), submits the following comments for inclusion in the record of the hearing of the Subcommittee on Energy and Agricultural Taxation in connection with proposed legislation S 1396, The Energy Security Tax Incentive Act of 1983. Such Act would extend the "affirmative commitment" period for the energy tax credit applicable to synthetic fuel projects and would expand the availability of the credit to other ancillary equipment associated with such projects.

ANG, a subsidiary of American Natural Resources Company, is the operator for Great Plains, which is currently constructing the nation's first commercial scale coal gasification facility. When completed in late 1984, the plant will convert 14,000 tons of lignite coal into 137 million cubic feet of synthetic natural gas per day. A substantial portion of the project is alternative energy property which is expected to qualify for the energy tax credit under the provisions of Section 48(1)(3) of the Internal Revenue Code.

Tenneco SNG Inc. · ANR Gasification Properties Company · Transco Coal Gas Company · MCN Coal Gasification Company · Pacific Synthetic Fuel Company

The Great Plains project is being financed with a combination of equity provided by the project owners and funds borrowed from the Federal Financing Bank (FFB). The debt is guaranteed by the Department of Energy (DOE) under provision of The Federal Nonnuclear Energy Research and Development Act of 1974. Although the loan guarantee by the DOE was, of course, essential to the financing of the project, the substantial effect of the availability of the energy tax credit on the economic feasibility of the project must not be underestimated.

The substantial cash flow to be generated by the energy tax credit during the critical early period in the life of the project was a key consideration in structuring the financial terms of the transaction. In fact, the DOE has specifically stated (in a letter from Mr. Eric J. Fygi, Deputy General Counsel, Department of Energy, to the Internal Revenue Service, dated March 30, 1982) that "the sponsors and the Secretary of Energy relied heavily on the availability of the ETC in deciding whether or not to pursue the project." Mr. Fygi further suggested that the DOE would have to "re-evaluate the project" should the ETC be unavailable to the project. Thus, it is questionable whether construction of the Great Plains project would have progressed this far without the availability of the energy tax credit.

Opponents of synfuels development argue that the need for special tax incentives has been substantially eliminated by the decontrol of oil prices, the gradual deregulation of natural gas, generally higher energy prices and by conservation. We believe such a view is short-sighted because oil and gas are finite resources. New synthetic fuel technologies must be developed and facilities constructed to replace the oil and natural gas supplies currently being so rapidly depleted.

As Sen. Domenici commented in introducing this bill: "This proposal...is an interim emergency measure...." Additional incentives will have to be provided in the future to assure adequate fuel supplies. However, enactment of S 1396 will certainly send a message to those potential developers of synthetic fuels that Congress supports and encourages such development. Congress made its initial commitment to synthetic and renewable energy in 1978 and has repeatedly reaffirmed that commitment in subsequent years. We suggest that the time has come to bolster that commitment.

The Synthetic Fuels Corporations aptly noted in its January 24, 1983, report on "Effect of Income Tax Changes in Program of U. S. Synthetic Fuels Corporation," that the loss of certain tax benefits because of TEFRA has already resulted in the cancellation of a number of proposed synfuels projects. Any further reduction in the tax incentives currently available will substantially impede the development of a synthetic fuels industry.

An important provision in the bill allows an energy credit on oxygen plants and other ancillary equipment. In its January 24, 1982, memo, the SFC concluded that approximately 35% of the cost of the physical equipment and construction cost of a "typical" synthetic fuels plant is not eligible for the energy tax credit. The ineligible equipment, although essential to the process, is not considered by the IRS to be used to "convert" an alternative substance into a synthetic fuel, but merely to produce or supply the catalyst used in the conversion process. We believe that no logical reason exists to make this distinction. Certainly, equipment used in producing the oxygen, which when combined with steam and coal produces synthetic natural gas, is just as important to the production of the gas as is the equipment within which these basic feedstocks are combined. Thus, we strongly support a provision which would expand the scope of the energy credit to include such oxygen plants and other "ancillary" equipment.

The development of a synfuels industry in this country will require a joint effort on the part of industry and the government. While private funding requirements will be large, substantial government support, including tax incentives, will also be necessary. Thus, incentives other than the energy credit are essential. Senator Wallop asked for comments regarding the impact of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) on the synthetic fuels industry and suggestions for the Committee. As a start, we believe that effort should be made to restore many of the tax benefits lost to the taxpayer as a result of TEFRA. For example, the reduction in depreciable basis of one-half of the ITC and ETC would, but for a transitional rule, have cost Great Plains approximately $60 million in taxes. Other provisions reducing the tax benefits of all synfuel projects, thereby increasing the need of the sponsors of such projects to secure additional funding, include the reduction in the depreciation rates for 5-year property, and the required capitalization of construction period interest and taxes attributable to real property. We also suggest that the statutory provision (Section 44D) allowing a tax credit for producing fuel from a nonconventional source be amended to provide for a carryback or carryover of any credit not availed of in the year generated.

ANG, on behalf of the Great Plains partners, strongly endorses this proposed legislation. We believe that alternate fuel sources must be developed to insure this nation's continued growth and prosperity. Government assistance in various forms, whether it be tax credits, loan guarantees, or price supports, are essential to such development. Thus, while we believe it is important that this proposal to extend the "affirmative commitment" rule and to expand the scope of the energy credit be enacted, we also believe that it is not sufficient. Additional incentives should be made available to private industry for the development of a strong synfuels industry. We concur with Sen. Domenici that "To fail to develop synthetic fuels now, just because we are not confronted with an imminent crisis, is to close our eyes to the reality that oil and gas reserves, for example, are both finite in quantity and subject to supply interruptions in an unstable part of the world." A few years ago, Congress clearly recognized the urgent need to develop a synthetic fuels industry. The Great Plains project is the first commercial scale facility designed to meet this need. A failure by Congress to act now to encourage additional development may find that Great Plains will also be the last such project.

Very truly yours,

Jules W. Breslow

Jules W. Breslow
Tax Counsel
ANG Coal Gasification Company

SHL/JWB/mp

STATEMENT OF JOSEPH W. AIDLIN
VICE PRESIDENT AND GENERAL COUNSEL
OF MAGMA POWER COMPANY
TO THE
SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION
OF THE SENATE FINANCE COMMITTEE
ON SENATE BILL 1396
U. S. SENATE
(Hearing on S. 1396 held June 17, 1983)

My name is Joseph W. Aidlin. I am Vice President and General Counsel of Magma Power Company, an independent geothermal company engaged solely in research, exploration for and development of geothermal resources and in utilizing these resources for generation of electric power, and in food processing and other potential uses. I have personally been involved in all phases of the geothermal industry since 1955 and have participated in the major legislative, legal and structural aspects of the geothermal industry.

Magma Power Company has not requested or received any federal or state grants or loan guarantees. Its business policy has always been, and remains, to attempt to be competitive with other energy sources and to contribute to the public good while engaging in a profitable enterprise. This has not been an easy task, but without the energy tax credit, the task would be well nigh impossible. Magma Power Company, therefore, supports S. 1396. However, the requirement in the Bill that all permits be completed by January 1, 1986 and that half the required equipment be ordered prior to January 1, 1988, is unrealistic and for all practical purposes shortens the extended period to considerably earlier than December 31, 1992.

Geothermal resources used for generation of electric power or for any substantial non-electric use must be utilized where found, and there must be a buyer, who can utilize the energy or who will purchase the product, such as electric power from facilities which must be constructed at the resource site. In the case of electric power, this means that the person developing the resource must first prove it is adequate for the purpose contemplated, obtain a buyer who will construct the facilities to generate electric power, or obtain the financing to construct such facilities on its own, and the buyer of the electricity, whether it be from a plant constructed by the developer or a utility which constructs its own plant, must provide for transmission of that electric power. The time required to accomplish all this is apparent. Until all of the foregoing requirements have been met, it is not possible to even commence the engineering for electric generating facilities or to obtain the finances required or to commit to purchase equipment.

We urgently recommend that the provisions of S. 1396 with respect to geothermal resources requiring completion of studies and permits by a certain date and ordering of half or any part of the equipment within certain dates be eliminated and that the energy tax credit as it now exists be merely extended until December 31, 1992.

Magma Power Company has spent many millions of dollars in developing the technology to utilize middle temperature geothermal brines for the generation of electric power. That technology is now ready for commercial utilization. We have a 10 MW rated capacity plant presently functioning on a continuous basis in the East Mesa area of Imperial Valley, California. Interest is developing in applying the technology to the very extensive geothermal resources available. However, unless the energy tax credit is extended, it will just not be possible to complete any significant number of plants before the present expiration date. The same is true of a different geothermal resource, the highly mineralized brines such as those found in the Niland area in Imperial Valley, California, where Union Oil Company is now demonstrating a technology conceived by Magma Power Company. Magma Power Company at the present time is attempting to obtain financing for a 33 MW plant in the area and has permits for a 49 MW plant in the area. However, unless the energy tax credit is available, the projects cannot be economically competitive and would, therefore, not go forward.

I understand that the Treasury Department objects to extension of the energy tax credit. I cannot understand the logic behind such objection. Without the credit, there will just be no utilization of this valuable resource on a competitive basis, and there will be no income upon which to pay taxes. With the extended credit, there is the possibility of developing a viable tax paying industry. Without it, the Treasury Department gains nothing, the economy gains nothing, our national energy position is not improved and the people lose.

I very much urge adoption of S. 1396 without the limitations which I have noted.

Respectfully,

mcr
MCR GEOTHERMAL CORPORATION
10880 Wilshire Boulevard
Los Angeles, CA 90024 • (213) 879-5252

1983 JUN 17 AM 10: 11

June 13, 1983

The Honorable Senator Malcom Wallup
Chairman
Subcommittee on Energy and Agriculture Taxation
Room SD-122
Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Wallup:

In lieu of a personal appearance before the Subcommittee on Friday, June 17, 1983 as I requested, I submit the accompanying brief statement in support of Senate Bill S1396.

MCR Geothermal submits the following in suppport of Senate Bill S1396 in its entirety and with specific emphasis upon its application to geothermal energy. The extension of the period for qualifying certain property for the energy tax credit and for other purposes is vital to achieve the necessary goals for geothermal energy. While we have developed 1000+ megawatts from dry steam in the Geysers over a period of 20+ years, the limits of that field have not yet been defined nor have other areas been adequately explored to credibly predict geothermal's contribution to the country's energy reserve.

In reservoirs with high brine content, we are dealing with an unproven technology. The risks are high, the assets employed specialized and expensive, and the time long for the solution of problems and the design and development of appropriate equipment.

The purpose of tax credits is to provide risk capital incentives, to create just such new equipment, systems and processes capable of contributing to the tax base of an expanding economy.

AN **MCO Resources, Inc.** COMPANY

The extension of the time limits for the Energy Investment Tax Credit as proposed by Senator Dominici's bill, S1396, is especially appropriate as the overall economy is struggling, and the geothermal industry in particular is faced with a limited cash flow. Resolution of the problems in binary systems and increased effort in funding the difficult answers in the application of crystallizers are examples of the time consuming technical exploits to convert the large high temperature, high pressure heavy brine deposits to megawatts and recover secondary minerals.

The Geothermal Industry needs S1396 and urgently supports its passage.

Sincerely yours,

MCR GEOTHERMAL CORPORATION

Rollin M. Russell

Rollin M. Russell
Vice President

RMR/vc

(Mr. Russell is Vice Chairman of the WOGA Geothermal Committee)

Prepared Statement
for the
Subcommittee on Energy and Agricultural Taxation
# of the
Committee on Finance

United States Senate
98th Congress, 1st Session

By
O. Griffith Sexton
Principal
Morgan Stanley & Co. Incorporated

June 17, 1983

Mr. Chairman and members of the Subcommittee, my name is O. Griffith Sexton. I am a Principal of Morgan Stanley & Co. Incorporated, an investment banking firm headquartered in New York City. The opinions and conclusions which I will present today are those of Morgan Stanley & Co. Incorporated.

I welcome this opportunity to comment on bill S.1396 (the Energy Security Tax Incentives Act of 1983), introduced by Senator Domenici, to extend the period of time during which certain renewable energy and synthetic fuels property will remain eligible for the Energy Tax Credit (ETC). In particular, I would like to focus my remarks on the benefits derived by the geothermal industry from the ETC and the reasons why the ETC should be extended, as proposed by the bill, until 1992.

Before outlining for you my reasons for supporting the extension of the ETC, I would like to provide you with some background on myself and on Morgan Stanley. My educational background includes a B.Sc. from Princeton University and an MBA from the Stanford Graduate School of Business. I joined Morgan Stanley in 1973 and was elected a principal of the firm in 1980. Since joining Morgan Stanley I have worked in various areas of the firm, including Mergers and Acquisitions, Public Utilities, International Corporate Finance, and Project Finance. For the past two years I have been responsible for running Morgan Stanley's Project Finance Group, a group of 14 professionals specializing in the financing of various types of projects, including geothermal ventures, synthetic fuel and shale oil projects as well as more conventional industrial, mining and manufacturing projects.

Morgan Stanley is an investment banking firm engaged in all aspects of the underwriting business and the wholesale and retail distribution of securities of industrial corporations, public utilities, financial corporations, transportation companies, foreign corporations, governments and international agencies. The Firm is a member of the New York Stock Exchange, an associate member of the American Stock Exchange and a member of certain other regional exchanges.

Since its founding in 1935, Morgan Stanley has managed or co-managed a total of over $180 billion of public offerings and private placements of new issues of securities in the world's capital markets. The Firm has consistently ranked as one of the leading syndicate managers in dollar volume of issues offered in the United States and abroad.

In addition to activities related to underwriting and private placements and to brokerage and market making, Morgan Stanley provides a broad range of financial adivisory services to its corporate clients on matters including long-range financial policy and planning, mergers and acquisitions and designing financing plans for major construction projects.

Morgan Stanley currently acts as financial advisor for 24 projects with estimated capital costs of over $15 billion and has played a part in over 70 project assignments around the world in numerous industries, including geothermal energy, synthetic fuels, pipelines, mining, petrochemicals and industrial manufacturing. Morgan Stanley's role as project financial advisor typically includes designing a comprehensive financing plan, identifying possible equity investors, conducting joint venture negotiations, performing credit analysis, and arranging appropriate debt financing. It is our extensive experience in developing financing plans and raising capital for various sorts of projects which enables me to provide expert testimony on the importance of the ETC to the geothermal industry.

Since the institution of the ETC in 1978, the Congress of the United States has indentified the development of domestic sources of renewable energy resources as a national objective, for reasons relating to the national security aspects of energy supply, namely the increasing significance of foreign control of this energy supply brought on by the twin "oil shocks" of 1973-74 and 1979. My purpose today is not to review the benefits to be derived from the development of domestic renewable energy resources, but rather to outline the reasons for the importance and effectiveness of the ETC in encouraging such development, taking the geothermal industry as an example.

Although the exploitation of geothermal resources is not a recent development in the U.S. (the Geysers Field in California has been producing steam to run electric generators for many years and currently supplies over 1000 MW of capacity), it is today on the threshhold of an exciting period of expansion and development. S. 1369 can help ensure that this expansion and development occurs rapidly.

The primary benefit of the ETC is that it makes eligible projects more likely to be able to attract the necessary capital. In highly capital intensive projects (such as geothermal projects) where investment returns are earned over a period of many years, the issue of capital availability is often the most difficult problem project sponsors must solve. To understand the important role played by the ETC in the capital raising process, it is instructive to think of the prospective total return from a project as being divided between two components, one being returns which are dependent on the project's financial results (e.g., cash flow) and the other component being returns which are independent of the project's financial results (e.g., investment tax credit). The ETC affects prospective total return in two ways.

First, it increases the level of independent returns associated with any eligible project. This in turn means that, all other things being equal, the level of dependent returns required to attract investment is lower than would have been the case absent the ETC. This is important because, in this early stage in the development of the geothermal industry, it is very difficult for investors to assess the amount and timing of cash flow from a given geothermal project, both of which determine the level of dependent returns. By reducing the level of dependent returns needed to achieve a given level of total return, the ETC reduces the importance which investors otherwise would place upon the project making substantial short-term profits.

The second effect of the ETC upon prospective total return is also powerful. By increasing the level of independent returns the ETC also increases the percentage of the prospective total return which is independent of the project's financial results. Since independent returns are less risky than dependent returns, as the percentage of prospective total return derived from independent returns increases, the level of risk associated with total return decreases, which means that the level of prospective total return required to attract investment is lower.

There are a number of reasons why the benefits of the ETC are particularly significant and effective in promoting the development of the geothermal industry, and why they impact positively on a small, enterpreneurial firm like California Energy Company, a client of ours with ambitious plans to develop some of the nation's geothermal resources. Geothermal projects are typically characterized by large capital costs, since the drilling for steam and the building of power plants are capital intensive activities. The geothermal industry is also characterized by numerous small, dynamic firms attempting to exploit the nation's geothermal resources and develop geothermal energy's potential to be a significant supplier of secure, renewable domestic energy. The resulting situation is one of firms sponsoring geothermal development projects with capital costs well beyond their ability to generate funds. Entrepreneurial geothermal development firms, unable to fund these capital intensive projects from internally generated funds, and unable to borrow the large sums required to finance these projects by using their own credit, often must try to find other passive equity investors to commit funds to the geothermal projects they sponsor. The ETC substantially increases the attractiveness of geothermal projects to such passive equity investors for the reasons noted above. The eligibility of a proposed project for the ETC is often a significant factor in determining whether the project can in fact be financed. By increasing the chances that a project can attract the required equity investment, the ETC allows the many dynamic smaller firms in the geothermal industry to be more active in sponsoring projects and developing a strong geothermal industry that will some day be able to finance projects on a grand scale by itself.

An example of these small but active companies is the California Energy Company, a firm with less than $10 million of capital which is involved in, among other things, a geothermal project at China Lake, California which might ultimately cost hundreds of millions or even billions of dollars. We believe however, that the ETC will help make it possible for California Energy to attract sufficient equity capital to allow substantial borrowing and thus the development of this important project.

A good way of ensuring the continued expansion of the geothermal industry and the development of the nation's geothermal resource potential is to extend the time during which geothermal property is eligible for the ETC. Such an extension, as proposed in Senator Domenici's bill, S.1396, would ensure that the active role of the dynamic firms in the geothermal industry in the development of a renewable domestic supply of energy will continue in the future as it has so successfully in the past. Thank you Mr. Chairman.

PPG Industries, Inc. One PPG Place Pittsburgh, Pennsylvania 15272 (412) 434-2187

W. R. Harris
Group Vice President
Chemicals

June 29, 1983

Roderick DeArment, Esquire
Chief Counsel
Senate Committee on Finance
SD 222 Dirkseen Senate Office Building
Washington, D.C. 20510

Dear Mr. DeArment:

On behalf of PPG Industries, Inc., I want to thank you for the opportunity to testify at the June 17 hearings of the Energy and Agricultural Taxation Subcommittee on S.1396, to amend the energy tax credit rules. This is particularly appreciated since I understand some requests to testify were denied due to lack of time.

I would also like to express our disagreement with two arguments posed by the Treasury Department in opposition to S.1396.

On Section 7 of the bill, dealing with the affirmative commitment rule for chlor-alkali cell modifications, the Treasury Department argued that most qualifying investment had already been placed in service. At least in our case, this is untrue for either of our two cell modification projects. As we noted in our statement, one project is expected to be completed and be placed in service later this year, and the other will not be completed before 1985. I believe a major competitor also has a cell modification project underway at this time. The Treasury Department was correct in stating that the affirmative commitment rule would make the credit available for property already under construction or for which commitments have been made. However, the energy credit was a considerable factor several years ago when we made financial commitments to our projects and did everything we could to qualify. We believe that this was the type of energy-saving investment the Congress contemplated when it created the secretarial authority which the IRS failed to exercise.

The Treasury Department also made the general argument that tax credits for synthetic fuels development are unjustified. We believe this argument is also shortsighted and unrealistic. In these times of abundant energy, it is well to remember the economic and social hardships imposed by energy shortages during the last decade. The specter of future energy shortages and the threat of these shortages to our national security should not be ignored. The unassisted development of synthetic fuels by the private sector will occur only when these costly and long-term projects are economic to build and operate. Present trends indicate that this most likely will not occur until a future energy shortage. Participation of the federal government in the development of a national synthetic fuels capability provides an unusual opportunity to act in anticipation of future circumstances, rather than reacting to an existing crisis. The present world abundance of conventional energy resources and the recent hiatus in energy price increases should not be considered a reason for abandoning synthetic fuels development, but should be looked upon as an opportunity to move forward with the effort so our nation is ready to meet future challenges.

Thank you again for your consideration. We appreciate the opportunity to testify on the affirmative commitment rule for chlor-alkali cell modifications.

Sincerely,

W.R. Harris

W. R. Harris

WRH:pm

Written Statement Submitted By
James R. Stites on Behalf of
Republic Geothermal, Inc.
Santa Fe Springs, California

This written statement is submitted by Republic Geothermal, Inc. of Santa Fe Springs, California in support of S. 1396, the "Energy Security Tax Incentives Act of 1983."

ABOUT REPUBLIC GEOTHERMAL, INC.:

Republic Geothermal, Inc. ("RGI" or "Republic") is an independent geothermal energy company currently involved in the exploration, development and utilization of our Nation's vast geothermal resources. Republic and various of its limited partnerships hold several thousand acres of geothermal leases in California, Nevada, Idaho, Utah and Oregon; and, the company is actively involved in exploration and development efforts in several of those western states, particularly California and Nevada. In addition, RGI has been actively involved with the Department of Energy in various cooperative research and development efforts relating to geothermal energy development. Also, an exploration drilling program by Republic on Unalaska Island, Alaska for the Alaska Power Authority is in progress. The results of that program to date confirm that our northernmost state has high temperature geothermal resources near potential market sites. Finally, for the past several years, RGI's international subsidiary has been under contract to a large company in Japan where extensive drilling for geothermal resources is underway. With the assistance of RGI's technical expertise and know-how, the Japanese are in the process of determining how best to develop that island country's vast supply of geothermal energy.

RGI's principal business is to supply geothermal resources to entities, particularly utilities, that will use the energy to produce electricity or for direct heat applications. However, until the utility industry and others are more confident with the resource, Republic will be required to assist in the development of a user industry as well. This means that we are also engaged in developing directly or through third party investors, projects that will use the geothermal energy as a feedstock. Once the technology is adequately demonstrated and the reliability of the resource has been established, then RGI will return to the role of a supplier of the resource and other parties, probably utilities, will take over the role of powerplant developer or user.

GENERAL REASONS FOR SUPPORTING S. 1396:

The legislation currently under consideration by the Senate Committee on Finance, S. 1396, is an important step in signaling to the geothermal industry that the Congress intends to maintain, for those entities which have diligently pursued the development of alternative energy projects, the existence of certain energy tax credits beyond the current 1985 expiration date. More comprehensive legislation has been introduced to both extend the current expiration date and to increase the amount of certain renewable energy tax credits. RGI supports enactment of that legislation as well. However, for Republic, the significance of the Energy Security Tax Incentives Act of 1983 (S. 1396) is that Congress, during this session and with minimal revenue impact, could quickly insure that projects currently being planned, or now on the drawing boards, will not be shelved by project sponsors who conclude that the current expiration date will come and go before the energy property is placed in service, in which case the energy tax credit is lost.

SPECIFIC REASONS FOR SUPPORTING S. 1396:

Republic is currently involved in the development of a hot water-dominated 49 megawatt (net) electric generating plant to be powered by geothermal resources. Unlike the dry steam resources of the Geysers field in northern California, where nearly 1240 megawatts of electrical power are currently being produced, hot water-dominated geothermal resources have yet to be extensively utilized on a commercial scale in the United States. However, water-dominated resources are thought to be much more abundant in the U.S. than the dry steam resource. A number of companies, including Union Oil, Magma Power, Southern California Edison, and Utah Power and Light, have constructed demonstration plants using the hot water-dominated resource. The results of those efforts and Republic's confidence in both the resource and the currently available utilization technology have lead to the decision to proceed to the commercial-sized project. The project (designated the Niland Geothermal Project) is located in the Imperial Valley of southern California. It will be constructed in two stages. Financing, permitting, contractual arrangements, feasibility studies and designs on the first 25 megawatt stage are nearly complete and it is anticipated that, barring any delays, start-up of the powerplant will occur in late 1985. The second 24 megawatt follow-on stage will commence once the first stage is fully operational. The second stage is targeted for operation in late 1987.

If this project is successful RGI will participate with Southern California Edison, the purchaser of the power output from the Niland project, in developing and providing several hundred additional megawatts of power from leaseholdings currently under Republic's control. The U.S. Geological Survey estimates that the ultimate power generation potential from the area where the Niland Geothermal Project is located is on the order of 3,400 megawatts. This is more than the electricity requirements for the entire Washington, D.C.-Maryland-Virginia metropolitan area for 30 years and, if developed, this geothermal energy will displace about 50 million barrels of imported crude oil per year. At 30 dollars per barrel, this displacement of imported crude oil amounts to one and one-half billion dollars per year which would not be paid to foreign energy suppliers. USGS has also estimated that potential hot water-dominated geothermal resources at known sites in the United States could, if developed, provide enough energy to produce over 20,000 megawatts of electrical power for 30 years.

However, in order to insure that private industry will fully develop this vast potential resource, it is necessary to construct and operate a series of pioneer facilities. The Niland Geothermal Project would be the first such facility.

The financial stimulus provided by the existing energy tax credits is vitally important toward insuring that private industry rapidly proceeds with the development of this huge domestic energy resource. A small company, like Republic, does not have the internal resources to alone finance the Niland Geothermal Project. Republic has already raised, and expended, over eight and one-half million dollars in the development of this project. The project, however, will cost nearly $135.0 million and in order to complete financing a total of nearly $26.4 million in additional equity will be required. The perceived high risk, the payback period on equity, and the anticipated rate of return from the project are not sufficient to attract traditional venture capitalists; even with the availability of substantial tax-related incentives, including regular and energy investment tax credits and accelerated cost recovery on qualifying equipment. Republic has been successful, however, in joining with a major engineering and construction firm that has a history of interest and participation in the geothermal industry. This joint venture partner will be able to provide the bulk of the additional equity for the project and, in return, will be able to participate in construction of the project and utilization of available tax benefits. Without the currently available tax-related incentives, including tax credits and the benefits provided through the accelerated cost recovery system (ACRS), it is unlikely that RGI would have been able to interest such an attractive or substantial company to provide the necessary additional equity capital. If there is a jeopardy that final design and construction cannot be completed and the facility placed in service by December 31, 1985, when the current energy tax credits expire, there is a strong likelihood that the project will not proceed.

The final design and construction schedule and initial facility start-up and performance testing for the first 25 megawatt stage will require nearly 30 months to complete. Any slippage in this schedule may result in the project missing the all-important "placed in service" date. Given the current schedule for completion of construction and the beginning of operations, the Niland Geothermal Project, which has already experienced significant delays, could be faced with the prospect of not being able to meet the 1985 placed in service date. If that possibility becomes a major concern in the next several months, and there is an increased likelihood that the placed in service date cannot precede the energy tax credit expiration date, then the project sponsors will not commit additional funds to the project. Beyond the question of whether or not the first phase of the Niland project will be operational by the end of 1985, there is an additional uncertainty as to whether or not the second phase of the project (i.e. the second 24 megawatts), which would be operational after 1985, can be financed given the current projected price of imported crude oil to which the purchase price of the electricity from the Niland project is related. The availability of the energy tax credit during the post-1985 period would be exceedingly helpful toward insuring the construction of the follow-on stage of the Niland Geothermal Project. Enactment of S. 1396 would allow Republic to make the necessary affirmative commitments to insure eligibility for the then extended energy tax credits.

The Niland Geothermal Project has been under active development since 1979. RGI has already accomplished major steps toward project development including:

- the acquisition of the rights to the geothermal resource that will be used to power the facility;
- the drilling and testing of two development wells to confirm the existence of the resource (the temperatures of the geothermal fluids are more than sufficient to enable effective and economical utilization of state-of-the-art electrical production equipment);

- the signing of a formal Letter Agreement, incorporating a power purchase contract with Southern California Edison for purchase of the plant's total electrical output;
- the near completion of permitting work necessary to construct the project, including necessary environmental permits;
- the identification of a construction contractor; and
- the financing of the project, both equity and debt, is nearly in place.

A brief description of the Niland Geothermal Project is included with this statement as Attachment I.

THE NEED FOR AND COST OF THE ENERGY TAX CREDIT:

The importance of the energy tax credit cannot be over-emphasized. The tax credit is a key stimulant for attracting up-front equity capital and it is a mechanism by which the government can assist in directing capital towards worthy projects which might otherwise be without enough attractive features for the majority of today's large investors. In view of the substantial benefits which will result from this project alone and considering the very large investment which the Federal government has already provided through the Department of Energy geothermal energy research and development program, enactment of S. 1396 would appear to be sound public policy, even in light of the concerns which Congress has over the burgeoning Federal deficit. In the instance of phase one of the Niland Geothermal Project, it is now estimated that the energy tax credit will provide approximately $25.0

million dollars in support to the project. Based upon the per barrel oil equivalent of the plant's 25 megawatt (net) capacity 320,000 barrels of oil equivalent are produced annually. Over the 30 year life of the Niland project the energy tax credit constitutes a $2.60 per barrel of oil equivalent of support from the taxpayer. Although the Department of the Treasury has opposed enactment of S. 1396, the Congress is encouraged to consider the following benefits which will result from construction of the full 49 megawatt (net) Niland project:

- 625,000 barrels of imported oil will be displaced each year for 30 years, which at $30.0 per barrel is equivalent to $18.8 million annually and $562.0 million over the life of the project;
- 340 man years of employment will be created during construction of the facility and in excess of 750 man years of employment will be created during operation of the facility;
- successful completion will provide commercial validation of the most abundant form of geothermal energy (i.e. hot water-dominated) as suitable for utility use;
- assist in preventing the United States from losing its current position as the world leader in the development of geothermal-related energy technology; and

- in excess of $476.0 million will be generated in Federal income taxes to be derived from revenues of the project.

These immediate benefits, coupled with the large potential energy resource that will become commercially viable when the Niland Geothermal Project is brought on line, strongly argue for the changes to the tax code suggested by relevant provisions of S. 1396.

ADDITIONAL INFORMATION REGARDING THE NEGATIVE IMPACTS OF TEFRA:

The Chairman of the Subcommittee on Energy and Agricultural Taxation, Senator Wallop, has requested also that interested parties address the impacts on energy-related projects resulting from enactment of various provisions contained in the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA). Two provisions of TEFRA negatively impacted the Niland Geothermal Project. While none of these provisions constituted an absolute economic barrier to development of the Niland project, it is perhaps important to note that each of these changes in Federal policy accomplished through TEFRA lessens the attractiveness of developmental projects like Niland which are first-of-a-kind, very capital intensive, sensitive to even minute changes in the economics of the project, reliant upon venture capital, and perceived to be very high risk. Indeed, TEFRA was considered, and enacted, during a crucial period when RGI was attempting to attract equity capital. Consideration, and then enactment, of those changes both delayed and eliminated some sources of equity then under consideration. More specifically, economic analysis and financial viability of the project were premised initially upon the ability of project sponsors to claim the following:

- an ACRS deduction which approximated the benefits of the 175% declining balance method with a change to the sum of the years digits method; and
- cost recovery when computing ACRS deductions which did not require a reduction in basis equal to 50% of the value of tax credits taken.

Of course, TEFRA made changes to all of the provisions described immediately above. In so doing, the economics of the Niland project were adversely affected. By repealing the 1986 ACRS schedules the payback period on equity will be delayed which, in turn, will increase the already high economic risk during the early project years and will reduce the present net value of the full return to the equity investor.

Second, the so-called "basis adjustment" clause, which requires a deduction of 50% of the value of tax credits from the asset cost base, had an equally significant negative impact on the financial returns of the project. In order to maintain the same financial return to the investor an increase per kilowatt hour would have been required. However, because the price paid by the utility purchaser was capped, any increased costs to produce electricity had to be absorbed by the project, thereby effectively lowering return on equity investment and eliminating certain sources of equity capital.

CONCLUSION:

Any increase in the amount of the credit and an actual extension of the energy tax credit for geothermal energy property would be exceedingly useful to those geothermal projects which were more adversely impacted than the Niland project by the provisions of TEFRA described above. For that reason, Republic would urge that the Committee on Finance also consider the need for enacting other legislation which attempts to restore, through an increase in the energy tax credits, that which was taken away through enactment of TEFRA.

However, to re-emphasize RGI's vital concern about the Niland Geothermal Project, it is respectfully requested that the Congress act quickly and affirmatively on S. 1396 to insure that for those projects like Niland, which are now on the drawing boards, there will be assurance that if certain affirmative commitments are made to the project, the energy tax credits will be available for the extended period of time through 1992.

Attachments

Attachment I

Introduction

Niland Associates, a joint venture between Niland N.V., a Netherlands Antilles Corporation, and Republic-1976 Geothermal Energy Drilling Program, a limited partnership of which Republic Geothermal, Inc. (RGI) is the sole general partner, was formed in 1979 to develop and produce geothermal energy from leaseholds on private lands which are located just south of Niland, California. The specific objective of Niland Associates is to develop the resources necessary to power a 49 MW (net) electric generating power plant. This plant will be constructed in two stages of 25 megawatts with a follow-on stage of 24 megawatts.

The initial 25 megawatt phase of the Niland project is estimated to cost approximately $135.0 million, including interest during construction and allowances for inflation and contingencies. The project sponsors will provide a total of $34.9 million in equity financing; $8.5 million has already been expended by Niland Associates on resource exploration and development. The joint venture's activities conducted to date have confirmed the existence of a commercial-sized geothermal resource. The remaining equity required to drill wells and develop the geothermal reservoir and construct the power plant will be provided by a major engineering and construction firm which has been involved in geothermal development for several years. Once financing has been arranged and drilling and construction commence, the project is expected to be on-line within 30 months; the power plant will then supply electricity for at least 30 years thereafter.

Description of the Project

The electric generating plant proposed by Niland Associates is designed to convert energy contained in geothermal fluid into electricity utilizing a conventional dual-flash steam-turbine generating cycle. It will be comprised of a single, dual-pressure, dual-flow, steam-turbine generator having a nominal capacity of 49 MW (net). Initially, only enough production wells and auxiliary fluid handling facilities will be installed to generate 25 MW (net). Additional facilities necessary to fully load the turbine will be installed at a later date.

Geothermal hot water will be produced from seven wells drilled from four production islands. The fluid will be flashed to produce steam at each of these production islands. The resulting high-pressure steam will be piped from wellhead separators to the power plant and into the high-pressure steam turbine through a single-phase steam pipeline. The water remaining in the high-pressure flash tank after the steam has been separated will be piped through a single-phase liquid pipeline to the power plant site where it will be flashed again to provide low-pressure steam. This steam will flow into the low-pressure steam turbine. The residual liquid from this flash will be treated to remove suspended solids, filtered, then distributed to three injection wells for disposal. (See: Exhibit 1 which is a schematic flow diagram of the geothermal power plant.)

Electricity from the generator will be transformed to a suitable transmission voltage and connected to an existing power grid. The power generated will be transmitted to end users via the Imperial Irrigation District (IID) and then to the Southern California Edison (SCE) electrical network.

Description of the Geothermal Resources

The Niland resource is part of the large "Salton Sea" geothermal reservoir underlying a vast area of the Imperial Valley. (See: Exhibit 2 which is a location map of the project.) The resource is characterized by bottomhole temperatures in excess of 500 degrees Fahrenheit and high salinity brines. Deep drilling is required for the Niland area, but the costs associated with this type of geothermal resource drilling are now acceptable and can likely be lowered substantially with experience.

Continuous flow tests have been successfully completed by Niland Associates on two privately-financed test wells in the Niland leaseholdings. Testing has shown that scale formation problems caused by the high salinity brines are manageable; that a two stage flash steam-power cycle is economically feasible; that injection brine of low suspended solids content can be produced; and, that power plant effluents will not have significant environmental impacts. Furthermore, the flow tests have confirmed the presence of a substantial geothermal resource.

It is expected that the wells drilled as part of the Niland project will produce in excess of 350,000 lb/hr per well on a sustained basis. Based on conservative projections of average flowing bottomhole temperatures of 525 degrees Fahrenheit and total dissolved solids of 250,000 ppm, the electrical production capacity of each geothermal well will be in excess of 4 MW (net). Average well spacing will be 40 acres, which will enable the Niland Associates' leaseholds to accommodate in excess of 40 wells, clearly a sufficient number to sustain more than the planned 49 MW (net) of electrical power production for an indefinite period of time.

Regulatory Framework

The proposed project represents a continuation of a geothermal resource exploration effort in the Niland area, for which necessary regulatory approvals and environmental reviews have already been obtained. In accordance with the California Environmental Quality Act, Imperial County has completed a Master Environmental Impact Report for the entire Salton Sea Geothermal Anomaly, including the Niland area, which evaluates the impact of full field and power plant development to produce up to 1,400 MW of electricity. In addition, there have been a variety of environmental assessments and data gathering programs already conducted for this area.

Thus far, Republic Geothermal, on behalf of Niland Associates, has obtained a conditional use permit for a total of 14 wells from Imperial County. In addition, the California-Regional Water Control Board, Colorado River Basin Region, has issued three Waste Discharge Orders, with one additional order remaining to be secured. The California Division of Oil and Gas has issued approved Notices to Drill for the two existing wells, and it is anticipated that notices for additional wells will be obtained without delay when a schedule for drilling has been established. Finally, the Imperial County Air Pollution Control District has given the sponsors authority to construct 14 of the planned wells. Based on this successful record of securing timely regulatory approval, no difficulty is anticipated in securing the additional regulatory approvals required for the project.

Marketability and Economics of Electricity Produced from the Project

In order to ensure that the electrical energy produced by the project will be purchased, RGI has negotiated contract terms for the sale of electricity to Southern California Edison (SCE). The final draft contract has been reviewed and approved by the parties. A formal Letter Agreement incorporating the contract was signed on February 25, 1983. Execution of the power purchase contract will be contingent upon the project sponsors obtaining financing for the project.

The electricity sales depend on the capacity factor of the project and on the behavior of incremental fuel costs in California which have been and are likely to remain low sulfur oil or natural gas. With the capacity charge component already determined in the contract and the RGI projection of incremental fuel costs reaching a level equivalent to oil prices, the project sponsors have determined that the resulting contract price for electricity will insure the economic feasibility of the project even though oil prices have fallen sharply in the last several months. In addition, because the levelized contract price is below the utility's avoided cost, the utility's customers will also substantially benefit from this project through lower electricity costs.

Conclusion

All the citizens of the United States will ultimately benefit from this first commercial-scale demonstration of geothermal power generation utilizing high salinity, high temperature fluids. Future development of the resources in the Imperial Valley alone could displace 50 million barrels per year of high cost low sulfur imported oil.

Beyond the immediate benefits of the Niland Geothermal Project and the eventual development of the entire geothermal resource where Republic's project is located, once the use of a hot water-dominated geothermal resource is commercially demonstrated, then this very large geothermal resource will be opened up for development.

Exhibit 1

SCHEMATIC FLOW DIAGRAM FOR THE NILAND 25/49 MW DUAL FLASH GEOTHERMAL POWER PLANT

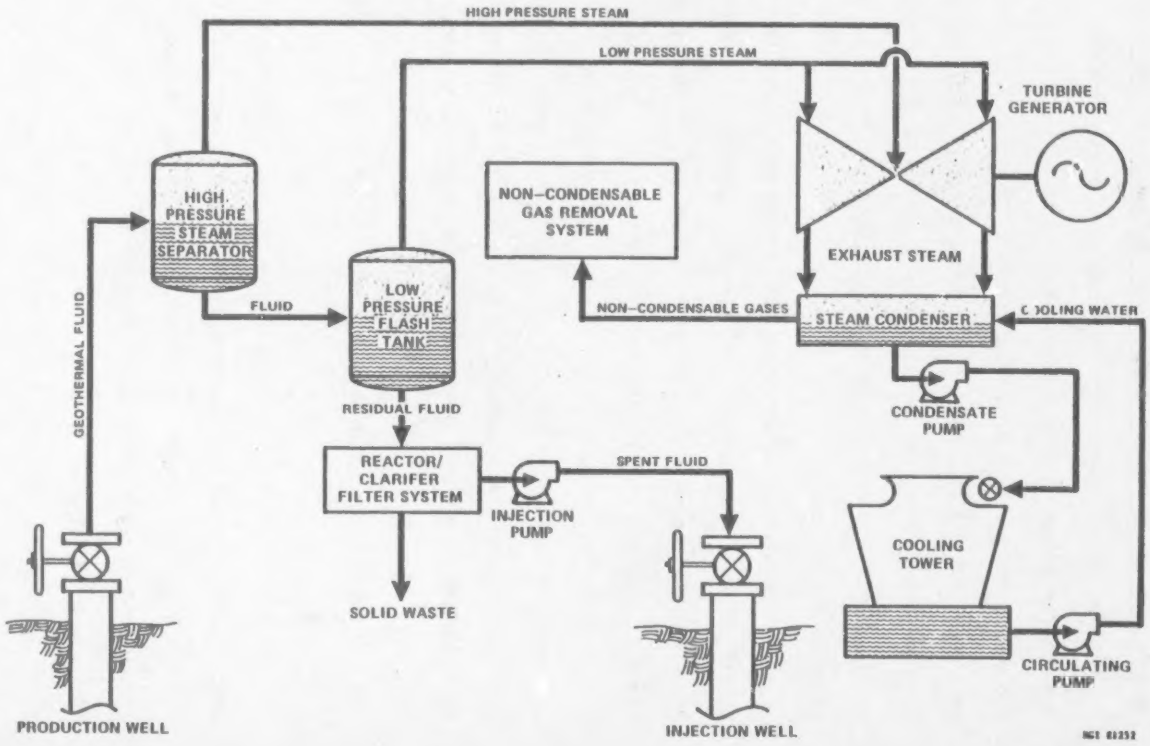
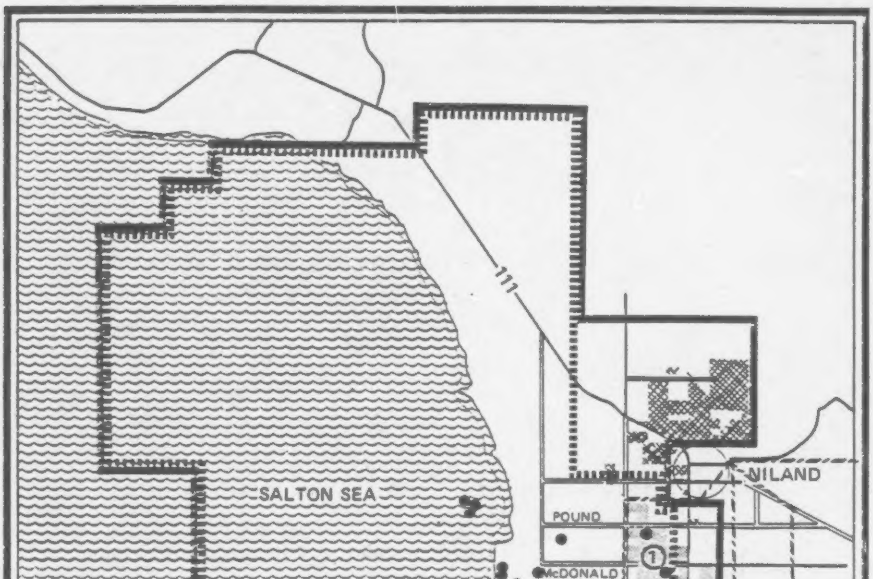

HIGH PRESSURE STEAM
LOW PRESSURE STEAM
TURBINE GENERATOR
HIGH PRESSURE STEAM SEPARATOR
GEOTHERMAL FLUID
FLUID
LOW PRESSURE FLASH TANK
NON-CONDENSABLE GAS REMOVAL SYSTEM
EXHAUST STEAM
NON-CONDENSABLE GASES
STEAM CONDENSER
COOLING WATER
RESIDUAL FLUID
CONDENSATE PUMP
REACTOR/ CLARIFER FILTER SYSTEM
SPENT FLUID
INJECTION PUMP
COOLING TOWER
SOLID WASTE
CIRCULATING PUMP
PRODUCTION WELL
INJECTION WELL

Exhibit 2

NILAND GEOTHERMAL ENERGY PROJECT LOCATION


SALTON SEA
111
NILAND
POUND
McDONALD
SINCLAIR
34.5 KV
ENGLISH
92 KV
161 KV
111
CALIPATRIA
115
EDDINS
S30
LACK RD.
GENTRY
1
2
3
N
LEGEND
1–REPUBLIC 25/49 MW POWER PLANT (1985)
2–UNION OIL/SCE 10 MW POWER PLANT (1982)
3–GEOTHERMAL LOOP EXPERIMENTAL FACILITY (DOE/SDGE)
SALTON SEA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
APPROVED IMPERIAL COUNTY GEOTHERMAL ZONE
WELLS DRILLED TO DATE
POWER LINES
NILAND ASSOCIATES PROJECT LEASES
NILAND ASSOCIATES OPTION LEASES
0 2 4 6
kilometers
0 1 2 3 4
miles

STATEMENT

of the

SOUTHERN CALIFORNIA EDISON COMPANY

CONCERNING THE ENERGY SECURITY TAX
INCENTIVES ACT OF 1983

Before the

Subcommittee on Energy and Agricultural Taxation

of the

Committee on Finance

of the

United States Senate
Washington, D.C.

June 17, 1983

Introduction

Southern California Edison Company (SCE) appreciates this opportunity to discuss the important role of the Business Energy Tax Credit (BETC) in bringing synfuel, renewable and alternative energy technologies to a point where the private sector can maintain momentum in commercialization activities. We at the Southern California Edison Company are committed to the accelerated development and deployment of renewable and alternative energy resources. Members of this Subcommittee are likely to be familiar with one of our major pilot projects, the 10 megawatt (MW) Solar One facility near Barstow, California, which is now operational.

Based upon our past experiences in research, development and demonstration of various new energy technologies, we have identified several areas where the private sector needs help so that American consumers can enjoy the benefits of alternate energy resources at the earliest possible time.

Summary of Principal Points

SCE analyses and recommendations are based on its background and involvement in an array of technologies, as well as continued interactions with entrepreneurs, manufacturers, the utility industry, renewable energy groups, trade associations, and research entities. SCE urges the Subcommittee and the full Committee on Finance to adopt the following actions to foster a timely and orderly accelerated development of synfuel, renewable and alternative energy technologies:

1. Immediate enactment of S. 1396, at a minimum, with the recommended amendment of making the energy tax credit available to utilities.

2. Extension of the energy tax credit through 1990, and enhancement similar to those provisions contained in S. 616, S. 1305, H.R. 1775 and H.R. 3072 now pending before various Committees of Congress.

3. Rescission of certain provisions of TEFRA, as explained more fully in the body of this statement.

Southern California Edison Company's Commitment to the Accelerated Development of Renewable And Alternative Energy Sources

SCE is one the the largest investor-owned electric utilities in the nation, serving a 50,000 square mile area of Central and Southern California, including some 800 cities and communities with a population of more than 9 million.

In 1980, SCE embarked upon a program of devoting our corporate resources to the accelerated development of renewable energy sources. Based upon our initial efforts in developing these resources, we now expect that one-third of the firm capacity additions to our system over the next 10 years will be from alternative or renewable resources. With the recent addition of Solar One and dedication of a 1 MW photovoltaic facility, SCE now obtains electricity from nine primary energy resources: oil, natural gas, coal, hydro, nuclear, wind, biomass, geothermal, and solar--more sources than any other electric utility in the world. Our objective/goal of the deployment of renewable and alternative resources is rapidly becoming a reality. Even with these recent achievements, however, the presence of certain Federal support, particularly in the form of tax incentives, continues to be needed so that the private sector can maintain the momentum necessary to commercialize new energy technologies.

Effectiveness Of The Energy Tax Credit

There exists a gap between the completion of the R&D phase and the commercialization phase for emerging energy technologies. We believe that the Federal government must ensure that a smooth transition for commercialization by the private sector is provided at the completion of the R&D phase. The Federal government can provide valuable assistance to industry--by making certain tax incentives available, such as the BETC and accelerated depreciation, so that the private sector can proceed. Without the existence of these tax incentives the Federal government would not be able to maximize the potential return on its prior research expenditures, and the commercial availability of these technologies would be significantly delayed, if not denied.

The BETC, together with accelerated depreciation, has provided a definitive, effective and key economic incentive for entrepreneurs to move forward with the commercialization of various renewable and alternative energy technologies.

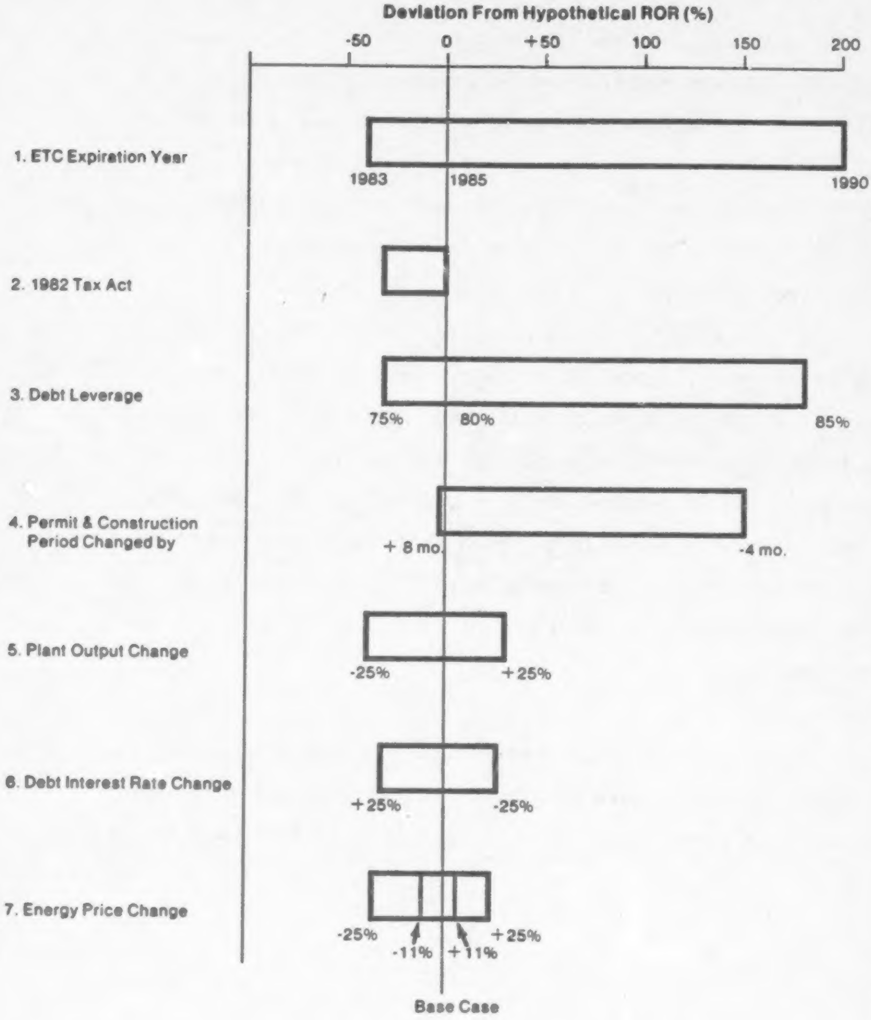
In our extensive negotiations for the installation of various emerging technology energy facilities, a number of third parties have stated explicitly that the availability of tax credits and accelerated depreciation have been the major factors in determining the economic feasibility of specific projects at this early stage of development. If these incentives were not available, most of the new facilities under consideration and negotiation would not be built. SCE estimates that if the BETC were not available, the company would lose access to at least 1100 MW of potential renewable/alternative capacity through 1985. This capacity would displace the energy equivalent of up to 4-1/2 million barrels of imported oil per year. Other electric utilities would also be seriously impacted. As a result, our country would be unable to reduce its high dependence on expensive foreign oil as rapidly as it might otherwise.

To examine the importance of the BETC in the private sector investment decision-making process, the following example (Figure 1) is based on the result of a study performed by the Martin Marietta Aerospace Corporation on the financial feasibility of a large solar facility. The study has evaluated the factors causing uncertainty about the rate of return on equity for project investors. Of the seven major uncertainties examined, the most important parameter for the improvement in rate of return to investors is the extension of the BETC, followed by an increase of the debt leverage ratio and a reduction of the permit and construction period. It should be noted that the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982 (P.L. 97-247, September 3, 1982) has substantially reduced the economic attractiveness of large solar projects, thus making the continued availability and enhancement of energy tax credits even more important.

One measure of the success of the current BETC is indicated by the number of private entities involved with the development of renewable/alternative energy resources. As a quick reference

Figure 1

SENSITIVITY ANALYSIS ON RATE OF RETURN (ROR) TO ENTREPRENEUR



to the extent of this involvement, Figure 2 summarizes the different third-party proposals currently under negotiation with SCE. In addition to projects summarized in Figure 2, SCE is conducting negotiations for the construction of one or more advanced solar thermal central receiver facilities in the 50 - 100 MW size range, up to ten times larger than Solar One. In biomass technology, Energy Support Systems, Inc. has installed a 1.8 MW woodwaste gasifier located at an SCE generating station to demonstrate the feasibility of producing synthetic gas for sale to SCE. We are also actively pursuing other waste-to-energy projects such as the Ventura County 20 MW Waste-to-Energy facility in the permitting phase. For other synthetic fuel projects, SCE and its partners (including Bechtel, General Electric, Texaco, EPRI and others) are constructing a 100 MW (1000 ton per day) coal gasification combined-cycle facility, at its Cool Water Generating Station site near Barstow, California. Further, SCE has two 10 MW geothermal demonstration facilities and is participating in a 50 MW Binary-Cycle Geothermal demonstration project.

Figure 2

STATUS OF WIND AND SOLAR POWER PURCHASE NEGOTIATIONS

(June, 1983)

	Number of Proposals	Total Megawatts
WIND		
Executed Contracts	18	265.80
Executed Letters of Intent	2	15.15
Under Negotiation	19	463.48
TOTAL	39	744.43
SOLAR		
Executed Contracts	3	50.025
Executed Letters of Intent	2	21.000
Under Negotiation	5	54.600
TOTAL	10	125.625
GEOTHERMAL		
Under Negotiation	4	108
Combined Total MW in negotiation or executed:		976.455 MW
Combined Total Projects:		53

Need For "Affirmative Commitment" Extension

Passage of the Energy Tax Act of 1978 and the Crude Oil Windfall Profit Tax Act of 1980 evidenced Congressional recognition that the BETC was and is necessary to the deployment of renewable technologies. In response to this initial Congressional commitment, the private sector mobilized its resources and developed a substantial momentum toward this important national goal. Recently, however, the private sector has been receiving mixed signals due to future uncertainties regarding the availability of the BETC.

To the contrary, instead of receiving such uncertain signals, renewable and synthetic technologies need a stable financial and tax framework within which to operate so that large projects with longer lead times can be planned and implemented. With the scheduled expiration of the Federal BETC in 1985, investors are now hesitant to make continued financial commitments to emerging energy technologies. Since there is inadequate time left for project planning and implementation, the current energy tax credit statute has ceased to be effective. Due to high front-end costs and a long construction period, this problem is of particular importance for large projects since in order to proceed, investors will require absolute assurance that the current tax credit will be available when the facilities go into operation.

Uncertainties involved in the installation of emerging technology facilities (renewable, alternative or synfuel) often include technological risks associated with first-of-a-kind scale-up, pace of technological progress, unknown facility life, performance characteristics, and generic failure. Financial uncertainties include questions concerning the ability to secure the necessary project financing, debt amortization, tax treatment, tax incentives, O&M expenses, and income and outflow cash streams as well as return on investment. On the regulatory front, uncertainties include difficulties and time delays in securing all the necessary environmental and construction permits. Without the extension or grandfathering of the BETC, most of the large projects under consideration cannot move forward since investors cannot be assured that the projects will be completed and in operation by 1985. Any slight delay caused by the above uncertainties will make the project economically unattractive to its investors. We believe that S. 1396 is a necessary step to foster private sector investments in emerging energy technologies, to maintain current momentum in private sector involvement, and to reactivate those projects that are under consideration.

The 98th Congress has shown substantial interest and support for the extension and enhancement of the current BETC. In particular, the renewable and alternative energy industries have been supporting the enactment of S. 616 (DeConcini), S. 1305 (Packwood), H.R. 1775 (Fuqua) and H.R. 3072 (Heftel) to these ends. While the long-term solution to the dilemma facing new energy technologies will be provided by the above proposed legislation, S. 1396 will provide an interim solution to the difficulties facing the embryonic renewable and synfuel industries so that they can proceed with their pending projects. This will allow Congress more time to discuss and enact the full extension and enhancement of the energy tax credit, which SCE fully supports.

Also, it is to be noted that S. 1396 and other Federal tax legislation could have far-reaching implications at the state level. Federal legislation is often used for the setting of national priority and directions, and for the adoption of related legislation at the state level. Some state tax credits are "indexed" to the continued availability of the Federal BETC. For example, there are two bills pending in the California legislature to extend the state tax credit to 1990 for solar, wind and conservation systems. However, both bills would require that the state tax credit not be available should the Federal energy tax credit expire.Thus, unless the Federal BETC is extended, renewable and alternative projects may lose both the Federal and state tax credits, moving these promising technologies even further from reality.

—

Potential Impact Of S. 1396

As previously stated, the enactment of S.1396 will allow the private sector to proceed with many of the renewable, alternative and synfuel projects that are currently under active consideration and negotiation. On the utility level, the "Affirmative Commitment" provision will enable SCE to secure at least 300 MW of additional capacity from entrepreneur-owned projects, thereby displacing up to 1-1/2 million barrels of oil annually. Other utilities will realize a similar gain.

According to U.S. Department of Treasury estimates, the use of the BETC has been lower than originally anticipated and its use is not expected to increase significantly. Over the life of the BETC, through 1985, the Treasury now projects a total of $120 million in tax credits will be claimed for solar and wind projects, down substantially from the 1981 estimate of about $500 million. While prediction of the exact revenue impact of S. 1396 is difficult, it is believed that only minor increases in tax credit claims will result.

As a matter of fact, results of several studies indicate that, over the life of these facilities, the Treasury may actually realize a net gain in revenue resulting from extension of the BETC. A recent study by Booz, Allen and Hamilton concludes that "without the Federal tax credit (extension) solar and wind technologies will remain uncompetitive except in niche markets through 1990. By 1990 (if the tax credit is extended), lower solar and wind technology capital costs and higher conventional fuel prices may result in a net annual gain to the Treasury." This anticipated net gain to the Treasury by 1990 would result from the reduced industrial fuel expense deductions and increased economic activities of the private sector. Another study was conducted by the California Energy Commission (CEC) on the revenue impact to the State Treasury from extending the California solar energy tax credit through 1990. This study concluded that the solar tax credit returns 80 percent more revenue to the state, on the average, over the life of the system, than is lost in granting the credit. This is due to the increased economic activities resulting in additional sales tax, income tax and property tax revenues to the state. While it would be difficult to extrapolate results of the California study to the Federal level, one may conclude that the extension of the Federal BETC may realize similar results. While the Federal government does not impose sales and property tax levies, the higher income taxes and employment tax resulting from increased economic activities and reduced Federal expenditures will provide a substantial benefit to the U.S. Treasury.

A recent study (1983) performed by the Solar Energy Industries Association concluded that investment in (renewable) energy has a net positive effect on the Treasury. In particular, the study showed that by continuing the tax credits (10 percent ITC and 15 percent BETC) the Treasury would realize about 55 percent revenue gain, over the life of a solar project. In a November 1982 DOE-sponsored study, Sandia National Laboratories also concluded that "even with the increased cost to the Treasury of the business energy investment credit, a positive revenue will flow to the Treasury over the lifetime of the first solar power plant."

Based on the above discussion, we believe that the enactment of S. 1396 would maintain private sector investment and momentum to continue the commercialization of new energy technologies through 1985. A long-range solution, and one which will maximize the benefits of new energy technologies, requires the extension and enhancement of the BETC through 1990. We believe such Congressional action is in the public interest, and is the most cost-effective and equitable method to bring renewable, alternative and synfuel resources to commercial reality at the earliest possible time while minimizing direct government involvement and expenditures.

Utility Eligibility For The Energy Tax Credit

To accomplish the Congressional intent for the accelerated development of renewable and alternative energy technologies, the BETC can be made much more effective by making it available to utility companies. Utilities are the single most capable industry to develop, promote and deploy new energy technologies for renewable, alternative and synfuel resources. They provide the largest market for these emerging technologies and constitute the primary driving force for early commercialization--all for the benefit of consumers.

Particularly for large-scale projects, utility equity participation is required to commercialize these technologies. Third party developers have continually requested utility equity participation in a variety of projects. However, under present law, SCE equity participation reduces the availability of tax credits and accelerated depreciation, thus increasing the cost to our ratepayers. Making the BETC available to utilities would enable the private sector to proceed with the commercialization of these technologies in the broadest manner possible. In sum, the exclusion of utilities from the BETC is an unnecessary damper to the accelerated commercialization of emerging technologies, both for small and large scale projects.

We urge the Subcommittee to incorporate the following paragraph to S. 1396: "Section 8. Technical Amendment - Clause (17) of Section 48(l)(B)(17) (Exclusion for Public Utility Property) is deleted in its entirety."

SCE believes that it will be able to use the tax credit available under the current tax law as well as any additional BETC which may be made available through the above recommended amendment. The additional energy tax credits made available to SCE would provide needed capital for the continued development of renewable, alternative and synfuel technologies. As required by the Economic Recovery Tax Act of 1981, the available energy tax credits will be "normalized." In other words, such credits would be ratably flowed-through and be passed to consumers over the service life of the facility for which the BETC was claimed. Therefore, consumers will realize the benefit of the energy tax credit while the facility is in operation.

Based on the above discussion, and the importance of the utility industry to the renewable, alternative and synfuel technologies, we respectfully urge the Subcommittee to make the BETCs available to utilities.

Impact Of TEFRA

As requested by the Subcommittee, SCE is pleased to provide a summary of our analysis on certain negative impacts imposed by the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA).

In general, the following three provisions of TEFRA have a particularly adverse effect on the development of synfuel, renewable and alternative energy technologies and on electric utilities.

1. Basis Reduction -

TEFRA requires that the tax basis of depreciable property must be reduced by one-half of the regular investment tax and BETCs. This provision reduced the incentive for the private sector to invest in renewable and synfuel projects by making certain projects uneconomical. As reported in a study by the Renewable Energy Institute, the basis adjustment provision of TEFRA actually reduces the value of the intended tax credit by 20 percent. Accordingly, the private sector, including various trade organizations, believes that this TEFRA provision should be rescinded for renewable, alternative and synfuel projects.

2. Capitalization of Interest and Property Tax Expenses -

TEFRA imposed substantial restrictions on the deductibility of interest and property taxes to be incurred during construction of real property that begins after 1983. Rather than being allowed a current deduction for such costs, it permits a deduction of one-tenth of such costs in the year incurred, one-tenth during the first year the property is placed in-service, and one-tenth in each succeeding eight years of operation. If a broad IRS interpretation of "Real Property" is adopted, it will place a substantial disincentive on investment in alternative and renewable energy property and synfuels property. In particular, most synfuel projects and large renewable and alternative energy projects require long planning and construction periods. The TEFRA treatment of these expenses, during construction periods, places substantial financial burden on these projects and makes them less economically attractive.

The TEFRA provision should not be applied to renewable, alternative, and synfuel projects. At the very least, statutory language should be inserted in the Internal Revenue Code limiting the definition of real property to Internal Revenue Code Section 1250 or Section 38 property. Essentially, the definition should be limited to buildings.

3. Accelerated Depreciation -

TEFRA rescinded the 175 percent and 200 percent Accelerated Cost Recovery System (ACRS) depreciation schedules to be implemented in 1985 and 1986 and beyond. This means that investments in synfuel, renewable, and alternative energy projects will be recovered at a slower pace. By reducing the earlier year depreciation allowances, the internal rate of return to an investor will be reduced by as much as 10 percent, thus making it less attractive for the private sector to invest in emerging technology projects. In addition, for some of these projects, the reduced cash flow may increase the difficulties in attracting investors or securing the necessary project financing. Thus, restoration of the 175 and 200 percent declining balance ACRS for synfuel, renewable and alternative energy projects is needed.

As for utility investment, utility property is usually considered as long-life and required to use the 15-year ACRS. Again, this treatment of utility property serves as a disincentive for utilities to invest in emerging technology projects and puts a large potential market at a competitive disadvantage. Accordingly, we feel that utility investments in synfuel, renewable and alternative energy projects should be treated identically to other types of ownership and be eligible for accelerated depreciation under the five-year ACRS. This will greatly enhance investments in these technologies and will accelerate their development.

With the above recommended amendments, Congress can remove the major and unnecessary barriers imposed by TEFRA for the development of synfuel, renewable and alternative energy technologies.

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